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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1996

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Energy and Water Development Approp...

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BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

JOHN T. MYERS, Indiana, *Chairman*

HAROLD ROGERS, Kentucky
JOE KNOLLENBERG, Michigan
FRANK RIGGS, California
RODNEY P. FRELINGHUYSEN, New Jersey
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VIC FAZIO, California
JIM CHAPMAN, Texas

NOTE: Under Committee Rules, Mr. Livingston, as Chairman of the Full Committee, and Mr. Obey, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

JAMES D. OGSBURY, BOB SCHMIDT, and JEANNE WILSON, *Staff Assistants*

PART 4

Department of Energy Fiscal Year 1996 Budget Justifications

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Departmental Administration	**1658**
Inspector General	**1779**
Environmental Restoration and Waste Management	**1803**
Uranium Enrichment Decontamination Fund	**2565**
Federal Energy Regulatory Commission	**2585**

Printed for the use of the Committee on Appropriations

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1996

HEARINGS

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DOE/CR-0030
Volume 1 of 5

FY 1996 Congressional Budget Request

Atomic Energy Defense Activities

Weapons Activities
Other Defense Activities
Defense Nuclear Waste Disposal
Defense Environmental Restoration and Waste Management

Chief Financial Officer

February 1995

Department of Energy

Volume 1

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ATOMIC ENERGY DEFENSE ACTIVITIES

VOLUME 1

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Energy and Water Development Subcommittees:					
Energy Supply Research and Development	3,175.2	3,160.0	3,314.6	3,314.6	3,396.5
Uranium Supply and Enrichment Activities	135.1	135.1	73.2	73.2	42.3
UE Decontamination & Decommissioning Fund	286.3	286.3	301.3	301.3	288.8
General Science and Research Activities	1,604.5	1,604.5	984.0	984.0	1,017.5
Isotope Production and Distribution Fund	4.9	4.9	—	—	—
Atomic Energy Defense Activities:					
Weapons Activities	3,630.2	3,294.3	3,229.1	3,240.2	3,540.2
Defense Environmental Restoration & Waste Mgmt	5,170.1	6,065.0	5,092.7	5,605.0	6,008.0
Materials Support & Other Defense Programs	1,960.4	1,401.3	1,849.7	1,326.3	1,432.2
Defense Nuclear Waste Disposal	120.0	120.0	129.4	129.4	198.4
Total, Atomic Energy Defense Activities	10,880.7	10,880.6	10,300.9	10,300.9	11,178.8
Departmental Administration	289.2	304.5	281.6	281.6	317.1
Office of Inspector General	30.4	30.4	26.5	26.5	31.0
Power Marketing Administration:					
Alaska Power Administration	4.0	4.0	6.5	6.5	4.3
Bonneville Power Administration (non-add)	(50.0)	(50.0)	(147.3)	(147.3)	(-200.0)
Conservation Direct Loan Financing Account (non-add)	—	—	—	—	(26.6)
Southeastern Power Administration	29.8	29.8	22.4	22.4	19.8
Southwestern Power Administration	33.6	33.6	21.3	21.3	29.8
Western Area Power Administration	285.1	285.1	229.8	229.8	310.9
Falcon & Amistad Operating & Maintenance Fund	—	—	—	—	1.0
Colorado River Basin	—	—	—	—	-10.0
Total, Power Marketing Administrations	352.5	352.5	280.0	280.0	355.8
Federal Energy Regulatory Commission	—	—	—	—	—
Nuclear Waste Disposal Fund	260.0	260.0	392.8	392.8	—
Geothermal Resources Development Fund	-4.5	-4.5	—	—	—
Total, Appropriations Before the Energy and Water Development Subcommittees	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Interior and Related Agencies Subcommittees:					
Fossil Energy Research and Development	426.0	426.0	441.8	441.8	436.5
Alternative Fuels Production	-4.8	-4.8	-3.9	-3.9	-2.4
Naval Petroleum and Oil Shale Reserves	214.8	214.8	187.1	187.1	101.0
Energy Conservation	669.1	669.1	770.8	770.8	890.5
Economic Regulation Administration	13.0	13.0	12.4	12.4	10.5
Emergency Preparedness	8.9	8.9	8.2	8.2	8.2
Strategic Petroleum Reserve	206.8	206.8	243.7	243.7	212.7
Strategic Petroleum Account	—	—	-107.8	-107.8	-187.0
SPR Decommissioning Fund	—	—	—	—	100.0
Proceeds from sale of Weeks Island Oil	—	—	—	—	-100.0
Energy Information Administration	86.6	86.6	84.6	84.6	84.7
Clean Coal Technology	221.5	221.5	37.1	37.1	45.0
Total, Appropriations Before the Interior and Related Agencies Subcommittees	1,841.9	1,841.9	1,674.0	1,674.0	1,599.7
Energy and Water Development appropriations	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8
Payment to States (non-add)	(2.5)	(2.5)	(2.5)	(2.5)	(2.5)
Uranium Enrichment D&D Fund Discretionary Payments	-129.8	-129.8	-133.7	-133.7	-395.0
Total, Department of Energy Appropriations	18,726.4	18,726.4	17,495.2	17,495.2	17,832.6

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL STAFFING REQUEST

	FY 1994 ACTUAL USAGE	FY 95 MINUS FY 94	FY 1995 ESTIMATE	FY 96 MINUS FY 95	FY 1996 REQUEST
ENERGY and WATER SUBCOMMITTEE					
HEADQUARTERS	6,709	260	6,969	388	7,357
FIELD	10,898	504	11,402	−162	11,240
SUBCOMMITTEE TOTAL	17,607	764	18,371	226	18,597
INTERIOR SUBCOMMITTEE					
HEADQUARTERS	1,337	92	1,429	−25	1,404
FIELD	894	−45	849	−11	838
SUBCOMMITTEE TOTAL	2,231	47	2,278	−36	2,242
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

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APPROPRIATION	FY 1994 USAGE	FY 1995 – FY 1994	FY 1995 ESTIMATE	FY 1996 – FY 1995	FY 1996 REQUEST
ENERGY SUPPLY R&D	1,290	35	1,325	23	1,348
HEADQUARTERS	1,118	18	1,136	23	1,159
FIELD	172	17	189	0	189
URANIUM ENRICHMENT	66	−21	45	9	54
HEADQUARTERS	33	−23	10	9	19
FIELD	33	2	35	0	35
ISOTOPE PRODUCTION & DIST	6	0	6	6	12
GENERAL SCIENCE & RESEARCH	148	−7	141	−33	108
HEADQUARTERS	87	−28	59	−3	56
FIELD	61	21	82	−30	52
WEAPONS ACTIVITIES	2,316	−144	2,172	58	2,230
HEADQUARTERS	324	−49	275	111	386
FIELD	1,992	−95	1,897	−53	1,844
ENVIRONMENTAL REST & WASTE MGT	2,067	1133	3,200	716	3,916
HEADQUARTERS	633	324	957	277	1,234
FIELD	1,434	809	2,243	439	2,682
MATERIALS SUPPORT	1,266	−99	1,167	−453	714
HEADQUARTERS	604	−57	547	−64	483
FIELD	662	−42	620	−389	231
DEPARTMENTAL ADMINISTRATION	3,034	35	3,069	−2	3,067
HEADQUARTERS	1,873	47	1,920	4	1,924
FIELD	1,161	−12	1,149	−6	1,143
INSPECTOR GENERAL	358	−2	356	0	356
ALASKA POWER ADMIN	33	2	35	0	35
BONNEVILLE POWER ADMIN	3,596	−156	3,440	−115	3,325
SOUTHEASTERN POWER ADMIN	42	−1	41	0	41
SOUTHWESTERN POWER ADMIN	198	−2	196	−1	195
WAPA – OPERATION & MAINT	1,281	−23	1,258	−6	1,252
WAPA – COLORADO RIVER BASIN	223	−14	209	−1	208
FED ENERGY REGULATORY COMM	1,434	29	1,463	−10	1,453
NUCLEAR WASTE FUND	249	−1	248	35	283
HEADQUARTERS	239	1	240	35	275
FIELD	10	−2	8	0	8
CLEAN COAL TECHNOLOGY	85	1	86	−10	76
HEADQUARTERS	22	2	24	−1	23
FIELD	63	−1	62	−9	53
FOSSIL ENERGY R&D	751	−25	726	0	726
HEADQUARTERS	151	0	151	1	152
FIELD	600	−25	575	−1	574
NAVAL PET & OIL SHALE RES	84	−8	76	0	76
HEADQUARTERS	18	1	19	0	19
FIELD	66	−9	57	0	57
ENERGY CONSERVATION	487	57	544	0	544
HEADQUARTERS	448	71	519	0	519
FIELD	39	−14	25	0	25
EMERGENCY PREPAREDNESS	65	2	67	−1	66
ECONOMIC REGULATION	135	−5	130	−20	110
STRATEGIC PETROL RESERVE	164	2	166	−1	165
HEADQUARTERS	38	−2	36	0	36
FIELD	126	4	130	−1	129
ENERGY INFORMATION ACTIVITIES	460	23	483	−4	479
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ATOMIC ENERGY DEFENSE ACTIVITIES

OVERVIEW

The Defense Programs budget is designed to meet the Presidential directives to support a Stockpile Stewardship program that maintains our nuclear weapons technology and competence and a Stockpile Management program that maintains the reliability and safety of the weapons in the enduring stockpile. The budget includes increases for new initiatives such as the National Ignition Facility, Accelerated Strategic Computing Initiative, Defense Programs support for the Los Alamos Neutron Scattering Center, and the development of a new tritium source. The budget also maintains the readiness of the Nevada Test Site to conduct a nuclear test within 3 years, supports a vigorous industrial competitiveness program utilizing cooperative agreements with private industry, and a Worker and Community Transition program to help mitigate the affect of layoffs at defense sites. The Nonproliferation and National Security programs continue to enhance the transition to a post-Cold War world. The Department will continue activities related to the Comprehensive Test Ban Treaty, other treaty initiatives, IAEA activities, and the Emergency Management program. Additionally, lab-to-lab assistance will be initiated with Russia dealing principally with materials control and accountability issues. The Office of Fissile Materials Disposition continues efforts begun in FY 1994 to secure large quantities of weapons-capable nuclear materials in the U.S. and Russia and plan for their ultimate disposition. Support also continues for the Plutonium Resource Center in Amarillo, Texas begun in FY 1995. The Naval Reactors program will continue research and development activities for the SEAWOLF and new attack submarine reactor plants, and inactivation of six of eight land-based prototype plants.

The DOE's Weapons Activities programs support the U.S. national security mission of maintaining a credible nuclear deterrent by ensuring safe, secure, and reliable nuclear weapons and the protection of the health and safety of the public, workers, and the environment. This mission will continue as long as nuclear deterrence remains part of the defense strategy of the U.S.

Weapons Stockpile Stewardship

The mission of the Weapons Stockpile Stewardship program is to sustain the safety and reliability of the nuclear weapons stockpile while beginning to replace reliance on underground nuclear testing for confidence in the stockpile with an improved science-based understanding of nuclear weapons. Formerly the Weapons Research, Development and Testing programs, the Stockpile Stewardship program will make extensive use of past nuclear test data in combination with future, non-nuclear test data and computational modeling, experimental facilities, and simulators to further a comprehensive

understanding of the behavior of nuclear weapons. The Core Stockpile Stewardship program provides for the physical and intellectual infrastructure required for the science-based stewardship program at the three defense labs and maintains the Nevada Test Site in a state of readiness to conduct an underground nuclear test within 3 years, if necessary. Core Stockpile Stewardship includes first year funding for three major initiatives: the Accelerated Strategic Computing Initiative; Defense Programs support for the Los Alamos Neutron Scattering Center (LANSCE); and the National Ignition Facility (NIF) in the Inertial Confinement Fusion (ICF) program. The ICF program is maintained at a level to promote the application of ICF technology in support of Stockpile Stewardship objectives, such as laboratory experimentation and theoretical studies into weapons physics and weapons effects testing. Technology transfer activities are maintained in the FY 1996 budget to promote and facilitate the transfer of unclassified, non-sensitive, dual-use technology from the weapons complex facilities to the private sector and to support the Presidential commitment to the New Generation Vehicle Initiative.

Weapons Stockpile Management

The Stockpile Management program encompasses the production, maintenance, and surveillance of those nuclear weapons specified in the Nuclear Weapons Stockpile Plan, which is jointly developed by the Departments of Defense and Energy and approved annually by the President. Although there are no requirements for any new weapons builds throughout the planning period, maintenance and surveillance of the stockpile, as well as dismantlement and disposal activities on weapons returned from the stockpile continue. The Stockpile Management program also supports activities aimed at maintaining long-term competence in key manufacturing processes and to develop and demonstrate production capability for improved surety components. Transition of Defense Program's surplus facilities at Rocky Flats, Mound, and Pinellas to Environmental Restoration and Waste Management (EM) are planned to be completed by the end of FY 1995. Activities to bring the Stockpile Management complex into compliance with modern environmental, safety, and health standards continue. Radiological/Nuclear Accident Response activities support maintenance of DOE's technical and operational capabilities for responding to radiological accidents/incidents worldwide. Materials Surveillance and Technical Support activities include: processing, stabilization, storage, handling, shipping, receiving, safeguarding, control, accountability, and disposition of surplus nuclear materials at former Defense Program facilities that have been transferred to EM. The FY 1996 Reconfiguration efforts focus on remaining activity transfers and qualifying production capability at the receiver sites for nonnuclear reconfiguration only. The core program supports a number of major activities that include: (1) warhead disassembly; (2) stockpile evaluation program; (3) repairing or replacing limited life components as needed; (4) upgrading to improve stockpile safety, security, and reliability. The Tritium Source program will provide an analysis of alternative sites and technologies for a new

assured tritium source to fulfill national security requirements. The technology alternatives for a new tritium supply include: Light Water Reactor, Heavy Water Reactor, High Temperature Modular Gas-Cooled Reactor, and a particle accelerator. FY 1996 funding will be used to initiate a project to provide a new assured tritium source, either a reactor or an accelerator. The Secretarial ROD is expected November 1995. Prior to FY 1996, Programmatic Environmental Impact Statement (PEIS) and support activities were included in the Program Support portion of Reconfiguration.

Weapons Program Direction

The Weapons Program Direction budget provides overall administrative support, including salaries and contractual support, to federal employees at Defense Programs Headquarters and Operations Offices. The statutory Community Assistance Program at Los Alamos, New Mexico is also funded here. The Emergency Management program, managed by the Office of Nonproliferation and National Security, supports the Department's Emergency Management System and the Emergency Operations Center.

The Other Defense Activities budget provides for the activities of the Office of Nonproliferation and National Security, Security Evaluations, Nuclear Safety, Worker and Community Transition, Fissile Materials Disposition, and the Naval Reactors Program.

Materials Support

The Materials Support program is abolished in FY 1996 with responsibility for the Savannah River Site (SRS) facilities moved to Environmental Restoration and Waste Management (EM) and surveillance and safeguarding responsibilities of Special Nuclear Materials at SRS, Fernald, Richland, Idaho, and Oak Ridge, along with some tritium activities, moved to the Stockpile Management decision unit within the Weapons Activities Appropriation.

Nonproliferation and Verification Research and Development

The Nonproliferation and Verification Research and Development program supports the research, development, testing, and evaluation of systems needed for treaty verification, proliferation detection, warhead dismantlement, and intelligence activities. The program is divided into four major system areas: Onsite systems, Regional Monitoring systems, Remote Sensing systems, and Advanced systems.

Arms Control

The Arms Control program supports negotiation and implementation of arms control and nonproliferation treaties, agreements and initiatives; including the Comprehensive Test Ban Treaty. The major areas of the program include: Analytical Support; Nuclear Nonproliferation Policy; Reduced Enrichment Research and Test Reactor (RERTR); International Safeguards; Export Control Operations; and Materials Protection, Control, and Accounting (lab-to-lab research will be initiated with Russia); Treaties and Agreements; and International Security.

Intelligence

The Intelligence program provides for increased proliferation intelligence of selected nuclear weapons states, and continues participation by the DOE in the Director of Central Intelligence's Nonproliferation Center. The program also provides for the continued development of the DOE counterintelligence program to deter and neutralize foreign intelligence services' actions to acquire classified or sensitive DOE information; and continued threat assessments of DOE's facilities and operations including threats involving nuclear material.

Nuclear Safeguards and Security

The Nuclear Safeguards and Security program is responsible for developing measures to assure adequate, cost-efficient, and effective protection of the Department's nuclear weapons, nuclear materials, facilities, and classified information against theft and sabotage, espionage and terrorist activity. The program supports technology development designed to provide state-of-the-art technology for our facilities. These developments will assist in providing cost effective long term security. It also continues to emphasize a comprehensive review and revision of existing classification policies and the declassification of large volumes of classified documents, especially those documents concerning environmental, safety, and health issues.

Security Investigations

The Security Investigations program funds background investigations for DOE and contractor personnel who, in the performance of their official duties, require security clearance permitting access to Restricted Data, National Security Information, or Special Nuclear Material.

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Security Evaluations

This program provides for independent oversight of the effectiveness of DOE safeguards and security policies and programs. This is accomplished by conducting inspections and assessments of safeguards and security policies, programs, and their implementation. Assessments of the effectiveness of protection policies and programs are conducted to provide a consolidated statement of the status of protection programs over the entire DOE complex. This program also budgets for the Radioactive Materials Packaging Certification program, which certifies that radioactive material packages are in compliance with Federal safety regulations.

Nuclear Safety

Nuclear Safety provides support to assure the Secretary of Energy, and, in turn, the Congress and the public that the Department of Energy workers, the public, and the environment are receiving the highest level of health and safety protection reasonably achievable from Departmental nuclear operations. The program has broad authority under its charter to monitor and audit all aspects of nuclear safety through inspections, assessments, and investigations to identify circumstances indicative of deteriorating or inadequate nuclear safety performance. The program is also responsible for the Department's enforcement policy associated with the civil and criminal penalty authority of the Price-Anderson Amendments Act of 1988.

Worker and Community Transition

In accordance with Section 3161 of the National Defense Authorization Act of 1993, the Worker and Community Transition program develops work force restructuring plans to assure that workers displaced because of curtailed defense mission responsibilities are provided assistance. The objective of these plans is to minimize the adverse impacts on displaced workers by addressing: separation incentives; retraining; preference in hiring at other DOE facilities; and relocation assistance. In addition, the Department may provide impact assistance for community economic development initiatives. Plans have been developed in consultation with other National, State, and local government and non-government groups, including unions and community associations. In addition, the Environmental Restoration and Waste Management (EM) program will provide funding for worker retraining, utilizing savings derived from contractor workforce reductions.

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Fissile Materials Disposition

This program is responsible for the Department's technical and management activities to assess, plan and direct the implementation of efforts necessary to provide for the safe, secure, environmentally sound long-term storage of all weapons-usable fissile materials and the disposition of fissile materials declared surplus to national defense needs. Program efforts include completion of a Programmatic Environmental Impact Statement (PEIS) and technical and economic analyses regarding long-term storage and disposition of weapons-usable fissile materials, primarily plutonium and highly enriched uranium. The Program's technical and management efforts also include coordination with the United States Enrichment Corporation and U.S. industry to implement actions to disposition, surplus, weapons-usable highly enriched uranium by blending it down to low enriched uranium for use as commercial reactor fuel. This would result in reducing stockpiles of surplus fissile materials while also returning significant financial benefits to the U.S. Treasury. The efforts of this Program will directly contribute to advancing U.S. and global nonproliferation interests involving Russia and other nations and improve the cost-effectiveness of the Department's management of stockpiles of surplus fissile materials.

Naval Reactors

The Naval Nuclear Propulsion program, carried out jointly by the Departments of Energy and Navy, provides the Navy with safe, militarily-effective nuclear propulsion plants in keeping with the Nation's defense requirements, and ensures their continued safe and reliable operation. Its policies and practices have achieved a worldwide reputation for excellence and safety -- U.S. nuclear-powered ships have steamed over 100 million miles without a single reactor accident or nuclear harm to crews, the public, or the environment. In FY 1996, Naval Reactors will continue to efficiently contribute to National security by: supporting and improving over 130 operating reactors across nine different classes; developing and testing advanced nuclear reactor plant components/systems intended for the new attack submarine class, which is required by the Navy to maintain a viable submarine force and industrial base; and conducting inactivation efforts on six of eight land-based prototype reactor plants.

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Weapons Activities

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

WEAPONS ACTIVITIES

VOLUME 1

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Atomic Energy Defense Activities
Weapons Activities

For Department of Energy expenses, including the purchase, construction and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense weapons activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; and the purchase of passenger motor vehicles (not to exceed [104] 79, of which [103] 76 are for replacement only, including [22] one police-type [vehicles] vehicle), [$3,229,069,000] $3,565,175,000 to remain available until expended: *Provided*, That the amount appropriated herein reflects anticipated savings of $25,000,000 associated with implementing a program to streamline Department of Energy contracts: *Provided further*, That in the event some portion of those savings are achieved in other accounts under this title, amounts equal to such savings may be transferred to this account without regard to the requirements or limitations of section 302 of Public Law 102-377.

Further, for these activities, $3,291,624,000, to become available for obligation on October 1, 1996 and remain available until expended, including the purchase of passenger motor vehicles (not to exceed 79 for replacement only including one police-type vehicle).

EXPLANATION OF CHANGE

In FY 1996, a new savings initiative is the $25,000,000 for the Department of Energy contractor streamlining, as part of the reinventing government initiative. The actual application of these savings will be determined at a later date.

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Weapons Activities					
Stockpile Stewardship	—	1,680.6	—	1,464.0	1,606.6
Research and Development	1,334.3	—	1,316.7	—	—
Testing	400.0	—	203.0	—	—
Stockpile Management	—	1,881.3	—	1,759.6	1,906.9
Stockpile Support	1,864.8	—	1,692.8	—	—
Program Direction	280.0	180.0	159.9	159.9	138.0
Complex Reconfiguration	193.2	—	—	—	—
Subtotal, Weapons Activities	4,072.3	3,741.9	3,372.4	3,383.5	3,651.5
Use of prior balances & other adjustments	-442.1	-447.6	-143.3	-143.3	-111.3
Total, Weapons Activities	3,630.2	3,294.3	3,229.1	3,240.2	3,540.2

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL REQUEST
WEAPONS ACTIVITIES
(dollars in thousands)

OVERVIEW

MISSION

America's security demands a continuing investment in our national defense. Nuclear deterrence is an essential part of that investment. It is an investment that has paid extraordinary dividends over the last fifty years. It is an investment that we cannot afford to neglect because of the nuclear dangers we continue to face. As President Clinton stated "we will retain strategic nuclear forces sufficient to deter any future hostile foreign leadership with access to strategic nuclear forces from acting against our vital interests and to convince it that seeking a nuclear advantage would be futile. Therefore, we will continue to maintain nuclear forces of sufficient size and capability to hold at risk a broad range of assets valued by such political and military leaders."

The United States nuclear weapons stockpile is undergoing dramatic changes as this nation has taken steps to reduce the global nuclear danger. Thanks to unprecedented arms control agreements between the United States and former Soviet Union, U.S. and Russian nuclear forces are being reduced. Since 1988, deployed United States strategic forces have been reduced substantially. The United States has halted the development and production of new nuclear weapons, and has begun closing portions of the weapons complex no longer needed to support the significantly smaller stockpile of the future. The United States still has a duty and obligation to ensure the safety, security and reliability of the enduring nuclear weapons stockpile. The task before the Department of Energy and its laboratories is, in many respects, even more difficult now than it was during the height of the Cold War.

In the past, our confidence in the stockpile was assured through a combination of nuclear testing and laboratory testing. In 1993, President Clinton extended until September 1995 a moratorium on underground nuclear testing that the United States had been observing since October 1992. At that time he challenged the Department "to explore other means of maintaining our confidence in the safety, reliability and performance of our own weapons." This challenge was codified when the Congress passed the FY 1994 National Defense Authorization Act that directed the Secretary of Energy "to establish a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons."

To meet this national security challenge, the Department of Energy has developed the science-based Stockpile Stewardship program to complement our ongoing Stockpile Management program. The Stewardship program is structured to maintain our high level of confidence in the safety and performance of our nuclear weapons while pursuing the Administration's goals of extending the Nuclear Non-Proliferation Treaty and completing work on a Comprehensive Test Ban Treaty. This is a laudable and essential goal to enable achievement of critical international nonproliferation objectives. Meeting the challenge of managing the nuclear future will not be easy. It will require a sustained commitment by our national leaders, the talents of our scientists and engineers at DOE production sites and the national laboratories, and it will require substantial investment in some new facilities and capabilities. Without these programs our confidence in the stockpile will decline to an unacceptable level and our national security will be at risk. The rate of decline cannot be predicted, and the path to recovery will require breakthroughs in unexplored areas of science and technology. Consequently, we have an obligation and a duty to meet this vital national security challenge.

Confidence in the safety, security, reliability, and effectiveness of the enduring nuclear weapons stockpile is absolutely essential since a credible nuclear deterrent remains the cornerstone of U.S. national security policy. In the past, safety and performance were evaluated by underground nuclear tests, and improved by the steady flow of new designs and production requirements entering the stockpile. Now, without the option of underground nuclear tests, and with no new design and no new production requirements planned for the foreseeable future, confidence in safety and performance must be based on confidence in the engineering skills and scientific judgments exercised at the DOE production facilities and national laboratories. The science-based Stockpile Stewardship program is designed to exercise and improve the critical skills and capabilities necessary to ensure our long-term confidence in the stockpile.

Our enduring stockpile will contain fewer weapons, fewer types of weapons; before too long the weapons will be considerably older than their nominal design lifetimes. Already the average age of weapons in the stockpile is about fifteen years and, with no new weapons in production, this aging trend will continue. The stockpile will also share many common components, thereby subjecting it to a greater chance of common-mode failure. The complexity of the issues arise from the physical phenomena--explosion, implosion, thermonuclear ignition, materials mixing--that takes place during the detonation of a nuclear weapon, along with the uncertainty caused by the aging of materials and components. To manage our nuclear future, we will rely on advanced computer modeling, nonnuclear experiments, and years of technical knowledge to assure our confidence in the reliability, safety and effectiveness of the aging nuclear weapons stockpile.

Maintaining confidence in the stockpile will require new methods to recertify the safety and reliability of weapons after extended periods in the stockpile or after significant modifications for safety enhancements. The Departments of Energy and Defense are examining the current procedures for the collection and analysis of stockpile data and areas for improving these procedures to ensure the highest degree of confidence in the stockpile. Ultimately, the only alternative to nuclear testing for recertification is improved predictive capability, made possible by improved science and engineering understanding and improved computational capabilities benchmarked against advanced nonnuclear testing and past nuclear test data.

The DOE nuclear weapons program is divided into two complementary elements--**Stockpile Stewardship and Stockpile Management**. Stockpile Management is responsible for the hands on, day-to-day functions and operations involved in maintenance and surveillance of the enduring nuclear weapons stockpile. This includes the manufacturing of nonnuclear limited life components, accomplishment of necessary safety, security, control and reliability upgrades and modifications, warhead dismantlements, and materials storage and disposition, and if required, the fabrication of replacement weapons. These functions must be provided as long as the United States relies on nuclear weapons for deterrence. In carrying out these functions Stockpile Management depends upon Stockpile Stewardship for technical support in all aspects of its work.

Stockpile Stewardship also provides design and engineering of new or modified subsystems needed for repairs, upgrades, modifications or replacements of stockpile systems. Most importantly, Stockpile Stewardship assures the capability to respond to any safety or reliability problem that may arise in the existing stockpile including the safe dismantlement and disposition of nuclear materials, and to reconstitute the nuclear weapons stockpile if needed. Together, these two efforts will help us maintain our confidence in the safety, reliability and performance of the stockpile and manage the nuclear future.

Progress to Date

We have accomplished a great deal in reconfiguring the Defense Programs production complex, both in terms of physical facilities as well as program priorities and emphasis. We have begun to downsize the complex by completing the defense production mission at the Rocky Flats Plant, the Mound Plant, and the Pinellas Plant, and reestablishing selected capabilities at other locations under the Nonnuclear Reconfiguration program. Landlord status for Rocky Flats was transferred to the Assistant Secretary for Environmental Management (EM), and we are in the process of transferring Mound and Pinellas to EM as well. In FY 1995, we also plan to transfer the Savannah River Site to EM, except for the tritium handling and bottling activities necessary to maintain the current stockpile. Led by these changes in the Plants, Defense Programs employment has declined sharply, from almost 52,000 in September, 1992 to about 25,000 projected for the end of FY 1996.

In keeping with the President's decision to extend the moratorium on underground nuclear testing, we plan to maintain a level of testing readiness at the Nevada Test Site (NTS) that would permit a resumption of testing within 36 months.

We have dismantled over 6,000 weapons since FY 1991, and are proceeding towards a greatly reduced enduring stockpile level. We are nearing completion of the Programmatic Environmental Impact Statement (PEIS) for the new tritium source, and issued a Notice of Intent in October, 1994, to commence another PEIS process for the Stockpile Stewardship and Stockpile Management programs.

We have also re-oriented some Defense Programs research activities into dual use technology work at the laboratories by entering research partnerships with the private sector through our Technology Transfer Initiative. These partnerships will contribute to the economic competitiveness of our Nation while preserving the intellectual and scientific skills at the laboratories necessary to the enduring defense mission.

We are now in the process of refining our strategic vision for 2010. We believe the future will be shaped by the following elements: a vigorous science-based stockpile stewardship program; a stockpile management program in terms of a steady state weapon replacement schedule; an assured supply of tritium; and a simplified weapon complex architecture. We believe that our future will be based on capability rather than capacity, and on the laboratories as the centerpiece of the efforts. We are examining innovative alternative futures with all of our current program participants; we are pursuing opportunities to work with other parts of DOE to both cost-share and to broaden the intellectual input and product output from our programs. Finally, we are using the PRIS process to work with stakeholders to provide them with accurate and honest information about our future plans with the hope that we can develop a more trusted relationship in which to discuss our shared future.

During FY 1995, we plan to couple the strategic vision with a concrete long-range plan to accomplish it.

SUMMARY

While the world has witnessed enormous changes over the last few years, nuclear weapons are still expected to provide their deterrence contributions to United States national security. Our continuing reliance on a nuclear deterrent requires that we have confidence in its safety, security, and reliability. Maintaining that confidence is the most important and challenging task before the Department. No longer can we rely on underground nuclear testing and a continuous stream of development and production engineering projects. In the future, our confidence will be premised on maintaining the vitality of the unique scientific and engineering skills of the Department and its weapons laboratories. To preserve and expand this resource, we have the science-based Stockpile Stewardship program to complement Stockpile Management programs. Science-based Stockpile Stewardship is a major scientific challenge. We are just beginning to understand the complexity of the challenge before us and devising the means to meet it. We are confident that these programs will allow the Department to state that the stockpile is safe, secure, reliable and effective. We also expect that the program will help us attract and retain the high-caliber of people across a broad spectrum of scientific and engineering disciplines required to maintain this Nation's nuclear deterrent. Finally, we expect that the program will provide a continuing boost to the science and industrial competitiveness of the United States.

FY 1996 Budget Request

The FY 1996 budget request for Defense Programs reflects changes to accomplish this vision. Weapons Activities now encompasses only three decision units: Stockpile Stewardship, formerly Weapons Research, Development and Testing; Stockpile Management, formerly Stockpile Support, Reconfiguration and some elements of Materials Support; and Weapons Program Direction. The restructured decision units are designed to support the new focus for the programs, and provide a logical vehicle for a more comprehensive integration if desired in the future. The budget request proposes to move the Materials Support activities to the Assistant Secretary for Environmental Management in keeping with the new mission for these programs.

The budget requests for Stockpile Stewardship and Stockpile Management reflect growth over FY 1995 levels. In Stockpile Stewardship, the program grows to support the following initiatives: the National Ignition Facility; Accelerated Strategic Computing Initiative; increased participation in the Los Alamos Neutron Scattering Center of Excellence (LANSCE); the Partnership for New Generation Vehicles; and four additional new construction starts. New initiative in the Stockpile Management program include research on technology for a new tritium source, pit storage containers, reservoir development, and operating and capital infrastructure support for remaining plants.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

Defense Programs funding by site is detailed in the table which follows:

WEAPONS ACTIVITIES
FY 1996 CONGRESSIONAL BUDGET REQUEST
SITE FUNDING TABLE

TOTAL WEAPONS ACTIVITIES APPROPRIATION ACCOUNT

(Dollars in Thousands)

	TOTAL WEAPONS ACTIVITIES			Weapons Stockpile Stewardship			Weapons Stockpile Management			Weapons Program Direction		
	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996
ALBUQUERQUE OPERATIONS OFFICE												
Albuquerque Operations Office	278,092	267,974	287,784	27,196	24,554	24,596	198,172	191,544	208,438	52,724	51,876	54,750
Kansas City Plant	326,898	290,639	289,895	3,172	4,995	5,155	322,526	284,544	284,740	1,200	1,100	0
Los Alamos National Laboratory	468,494	438,366	516,712	353,496	315,792	364,360	129,453	119,397	152,352	5,545	3,177	0
Mound Plant	5,075	5,701	250	773	1,044	250	3,802	4,293	0	500	364	0
Pantex Plant	237,550	253,860	270,920	0	0	0	236,450	252,410	270,920	1,500	1,450	0
Pinellas Plant	5,374	5,882	0	751	557	0	4,373	5,075	0	250	250	0
Rocky Flats Plant	55,815	53,011	46,750	1,660	1,308	750	54,155	51,253	46,000	0	450	0
Sandia National Laboratories	675,836	653,946	666,190	502,045	455,191	462,318	167,595	197,880	203,872	6,196	875	0
SUBTOTAL, AL	2,073,534	1,969,379	2,078,501	889,093	803,441	857,429	1,116,526	1,106,396	1,166,322	67,915	59,542	54,750
CHICAGO OPERATIONS OFFICE												
Argonne National Laboratory	3,584	1,110	918	2,850	600	600	694	510	318	40	0	0
Brookhaven National Laboratory	6,238	3,518	2,199	500	0	0	4,388	3,518	2,199	1,350	0	0
Chicago Operations Office	11,902	9,247	0	125	0	0	11,777	9,247	0	0	0	0
SUBTOTAL, CH	21,724	13,874	3,117	3,475	600	600	16,859	13,274	2,517	1,390	0	0
IDAHO OPERATIONS OFFICE	13,866	12,114	11,023	1,108	267	360	11,427	11,347	10,663	1,331	500	0
NEVADA OPS OFFICE	324,328	270,736	242,340	273,445	223,509	211,875	33,538	31,135	14,325	17,345	16,092	16,140
OAK RIDGE OPERATIONS OFFICE												
Oak Ridge Operations Office	31,602	8,092	6,465	500	451	232	29,939	7,231	6,233	1,163	410	0
Oak Ridge Y-12	429,731	388,151	403,019	21,058	26,553	26,284	406,323	359,798	376,735	2,350	1,800	0
Oak Ridge National Laboratory	9,882	10,281	10,281	300	300	300	9,582	9,981	9,981	0	0	0
SUBTOTAL, OR	471,215	406,524	419,765	21,858	27,304	26,816	445,844	377,010	392,949	3,513	2,210	0

WEAPONS ACTIVITIES
FY 1996 CONGRESSIONAL BUDGET REQUEST
SITE FUNDING TABLE

TOTAL WEAPONS ACTIVITIES APPROPRIATION ACCOUNT

(Dollars in Thousands)

	TOTAL WEAPONS ACTIVITIES			Weapons Stockpile Stewardship			Weapons Stockpile Management			Weapons Program Direction		
	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996
OAKLAND OPERATIONS OFFICE												
General Atomics	8,971	9,200	9,559	8,971	9,200	9,559	0	0	0	0	0	0
Lawrence Berkeley Lab	540	0	0	540	0	0	0	0	0	0	0	0
Lawrence Livermore National Lab	442,883	372,858	402,977	369,419	339,633	374,561	37,531	28,593	28,416	5,733	4,630	0
Naval Research Laboratory	8,215	8,750	8,500	8,215	8,750	8,500	0	0	0	0	0	0
Oakland Operations Office	31,073	16,091	16,812	13,127	564	814	1,982	1,785	1,883	15,964	13,742	14,335
University of Rochester	25,203	20,765	20,100	25,203	20,765	20,100	0	0	0	0	0	0
SUBTOTAL, OAK	516,685	427,662	457,948	455,475	378,912	413,534	39,513	30,378	30,079	21,697	18,372	14,335
RICHLAND OPERATIONS OFFICE												
Pacific Northwest Laboratory	500	0	0	500	0	0	0	0	0	0	0	0
Richland Operations Office	24,653	24,983	23,024	0	0	0	22,914	23,535	23,024	1,739	1,448	0
SUBTOTAL, RL	25,153	24,983	23,024	500	0	0	22,914	23,535	23,024	1,739	1,448	0
SAVANNAH RIVER OPS	128,267	132,921	136,235	2,170	2,549	800	120,947	128,222	135,435	5,150	4,150	0
HEADQUARTERS	152,818	107,937	256,510	33,516	27,456	95,168	78,710	40,277	131,569	42,592	40,202	32,775
O of EMERGENCY MGMT	17,336	17,336	20,056	0	0	0	0	0	0	17,336	17,336	20,056
SUBTOTAL	3,744,926	3,383,466	3,651,519	1,680,640	1,464,040	1,606,580	1,884,278	1,759,574	1,906,883	180,008	159,852	138,056
Use of Prior Year Balances	(450,625)	(143,276)	(86,344)	(90,000)	(79,725)	(21,500)	(360,141)	(52,052)	(58,444)	(484)	(11,499)	(6,400)
TOTAL, WEAPONS ACTIVITIES	3,294,301	3,240,190	3,565,175	1,590,640	1,384,315	1,585,080	1,524,137	1,707,522	1,848,439	179,524	148,353	131,656

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Weapons Research and Development

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Weapons Research and Development					
Operating Expenses	$ 1,137,988 a/	$ 1,178,309	$ -926 c/	$ 1,177,383	$ 0
Capital Equipment	82,879	75,138	0	75,138	0
Construction	113,408	68,490	-4,361 c/	64,129	0
Subtotal, Weapons Research and Development	$ 1,334,275 b/	$ 1,321,937	$ -5,287	$ 1,316,650	$ 0
Use of Prior Year Balances	-84,250	-57,989	-9,413 d/	-67,402	0
Subtotal, Weapons Research and Development	$ 1,250,025	$ 1,263,948	$ -14,700	$ 1,249,248	$ 0
Summary					
Weapons Research and Development					
Operating Expenses	$ 1,137,988 a/	$ 1,178,309	$ -926 c/	$ 1,177,383	$ 0
Capital Equipment	82,879	75,138	0	75,138	0
Construction	113,408	68,490	-4,361 c/	64,129	0
Subtotal, Weapons Research and Development	$ 1,334,275 b/	$ 1,321,937	$ -5,287	$ 1,316,650	$ 0
Use of Prior Year Balances	-84,250	-57,989	-9,413 d/	-67,402	0
Subtotal, Weapons Research and Development	$ 1,250,025	$ 1,263,948	$ -14,700	$ 1,249,248	$ 0
Staffing (FTE's)	92			100	

a/ Includes internal reprogramming of $484,000 to Education activities from Weapons Program Direction.

b/ Includes appropriation transfer from Department of State of $35 million to support interactions with the Former Soviet Union.

c/ Reflects allocation of bottom line Weapons Activities procurement reform savings ($5,287,000).

d/ Reflects allocation of bottom line Weapons Activities appropriated additional use of prior year balances ($9,413,000).

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ASSISTANT SECRETARY FOR DEFENSE PROGRAMS
(dollars in thousands)

KEY ACTIVITY SUMMARY

WEAPONS RESEARCH AND DEVELOPMENT

I. Preface: Weapons Research and Development

The Weapons Research and Development decision unit is eliminated in FY 1996. Continuing activities are included in the Weapons Stockpile Stewardship decision unit, except for Emergency Response activities which have been consolidated in the Weapons Stockpile Management decision unit. Narrative describing activities funded in FY 1994 and FY 1995 are contained in the Weapons Stockpile Stewardship and Weapons Stockpile Management key activity descriptions.

The following summary table shows Weapons Research and Development funding as appropriated, adjusted. Tables showing a crosswalk of FY 1994 and FY 1995 Weapons Testing funding into Stockpile Stewardship is included with the Weapons Stockpile Stewardship preface.

II. A. Summary Table: Weapons Research and Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
A. Research and Development Program				
1. Operating Expense				
a. Programs and Initiatives	$ 352,110	$ 271,352	$ 0	$ -271,352
b. Core Research and Advanced Technology	368,940	377,063	0	-377,063
Subtotal, 1. Operating Expense	$ 721,050	$ 648,415	$ 0	$ -648,415
2. Capital Equipment				
c. R&D Basic Equipment	$ 41,419	$ 35,420	$ 0	$ -35,420
d. R&D Computers	20,600	24,000	0	-24,000
Subtotal, 2. Capital Equipment	$ 62,019	$ 59,420	$ 0	$ -59,420
3. Construction				
e. GPD-101, General Plant Projects	$ 11,500	$ 4,500	$ 0	$ -4,500
f. 95-D-102, CMR Upgrades, LANL	10,250	3,300	0	-3,300
g. 94-D-102, Nuclear Weapon RD&T Fac Rev, Phase V, VL	4,000	13,000	0	-13,000
h. 92-D-102, Nuclear Weapons RD&T Facilities Revitalization, Phase IV, VL	27,479	17,449	0	-17,449
i. 90-D-102, Nuclear Weapons RD&T Facilities Revitalization, Phase III, VL	20,555	4,900	0	-4,900
j. 88-D-106, Nuclear Weapons RD&T Facilities Revitalization, Phase II, VL	39,624	20,980	0	-20,980
Subtotal, 3. Construction	$ 113,408	$ 64,129	$ 0	$ -64,129
Subtotal, A. Research and Development Program	$ 896,477	$ 771,964	$ 0	$ -771,964
B. Stockpile Stewardship				
1. Operating Expense	$ 0	$ 152,419	$ 0	$ -152,419
Subtotal, B. Stockpile Stewardship	$ 0	$ 152,419	$ 0	$ -152,419
C. Inertial Confinement Fusion				
1. Operating Expense	$ 169,205	$ 166,755	$ 0	$ -166,755
2. Capital Equipment	15,860	9,718	0	-9,718
Subtotal, C. Inertial Confinement Fusion	$ 185,065	$ 176,473	$ 0	$ -176,473
D. Technology Transfer				
1. Operating Expense	$ 212,733	$ 209,794	$ 0	$ -209,794
2. Capital Equipment	5,000	6,000	0	-6,000
Subtotal, D. Technology Transfer	$ 217,733	$ 215,794	$ 0	$ -215,794

II. A. Summary Table: Weapons Research and Development - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
E. NIS Industrial Partnering Program				
1. Operating Expense	$ 35,000	$ 0	$ 0	$ 0
Subtotal, E. NIS Industrial Partnering Program	$ 35,000	$ 0	$ 0	$ 0
Use of Prior Year Balances	$ -84,250	$ -67,402	$ 0	$ 67,402
Total, Weapons Research and Development	$ 1,250,025	$ 1,249,248	$ 0	$-1,249,248

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Weapons Testing

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Weapons Testing					
Operating Expenses	$ 371,655	$ 166,530	$ 0	$ 166,530	$ 0
Capital Equipment	19,400	15,470	0	15,470	0
Construction	9,000	21,000	0	21,000	0
Subtotal, Weapons Testing	$ 400,055	$ 203,000	$ 0	$ 203,000	$ 0
Use of Prior Year Balances	-5,750	-12,323	0	-12,323	0
Subtotal, Weapons Testing	$ 394,305	$ 190,677	$ 0	$ 190,677	$ 0
Summary					
Operating Expenses	$ 371,655	$ 166,530	$ 0	$ 166,530	$ 0
Capital Equipment	19,400	15,470	0	15,470	0
Construction	9,000	21,000	0	21,000	0
Total, Weapons Testing	$ 400,055	$ 203,000	$ 0	$ 203,000	$ 0
Staffing (FTE's)	167			160	

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ASSISTANT SECRETARY FOR DEFENSE PROGRAMS
(dollars in thousands)

KEY ACTIVITY SUMMARY

WEAPONS TESTING

I. Preface: Weapons Testing

The Weapons Testing decision unit is eliminated in FY 1996. Continuing activities are included in the Weapons Stockpile Stewardship decision unit. Narrative describing activities funded in FY 1994 and FY 1995 are contained in the Weapons Stockpile Stewardship key activity descriptions.

The following summary table shows Weapons Testing funding as appropriated, adjusted. Tables showing a crosswalk of FY 1994 and FY 1995 Weapons Testing funding into Stockpile Stewardship is included with the Weapons Stockpile Stewardship preface.

II. A. Summary Table: Weapons Testing

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
A. Testing Core Program				
1. Operating Expense				
a. Experimentation	$ 157,400	$ 0	$ 0	$ 0
b. Testing Capabilities and Readiness	207,515	160,000	0	-160,000
c. Marshall Islands/Dose Reconstruction	6,740	6,530	0	-6,530
Subtotal, 1. Operating Expense	$ 371,655	$ 166,530	$ 0	$ -166,530
2. Capital Equipment				
d. Testing Basic Equipment	$ 18,900	$ 15,000	$ 0	$ -15,000
e. Marshall Islands	500	470	0	-470
Subtotal, 2. Capital Equipment	$ 19,400	$ 15,470	$ 0	$ -15,470
3. Construction				
93-D-102, Nevada Support Facility, NV	$ 4,000	$ 17,000	$ 0	$ -17,000
General Plant Projects	5,000	4,000	0	-4,000
Subtotal, 3. Construction	$ 9,000	$ 21,000	$ 0	$ -21,000
Subtotal, A. Testing Core Program	$ 400,055	$ 203,000	$ 0	$ -203,000
Use of Prior Year Balances	$ -5,750	$ -12,323	$ 0	$ 12,323
Total, Weapons Testing	$ 394,305	$ 190,677	$ 0	$ -190,677

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Weapons Stockpile Stewardship

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Weapons Stockpile Stewardship					
Operating Expenses	$ 1,464,477 a/	$ 1,296,829	$ -926 c/	$ 1,295,903	$ 1,395,632
Capital Equipment	93,755	83,008	0	83,008	79,743
Construction	122,408	89,490	-4,361 c/	85,129	131,205
Subtotal, Stockpile Stewardship	$ 1,680,640 b/	$ 1,469,327	$ -5,287	$ 1,464,040	$ 1,606,580
Use of Prior Year Balances	-90,000	-70,312	-9,413 d/	-79,725	-21,500
Subtotal, Weapons Stockpile Stewardship	$ 1,590,640	$ 1,399,015	$ -14,700	$ 1,384,315	$ 1,585,080
Program Summary					
Core Stockpile Stewardship	$ 1,215,118	$ 1,050,060	$ -5,287 c/	$ 1,044,773	$ 1,109,708
Inertial Confinement Fusion	185,065	176,473	0	176,473	240,667
Technology Transfer & Education	238,217 a/	235,794	0	235,794	249,405
Marshall Islands & Dose Reconstruction	7,240	7,000	0	7,000	8,800
NIS Industrial Partnering Program	35,000 b/	0	0	0	0
Subtotal, Stockpile Stewardship	$ 1,680,640	$ 1,469,327	$ -5,287	$ 1,464,040	$ 1,606,580
Use of Prior Year Balances	-90,000	-70,312	-9,413 d/	-79,725	-21,500
Total Program	$ 1,590,640	$ 1,399,015	$ -14,700	$ 1,384,315	$ 1,585,080
Staffing (FTE's)	259			260	250

a/ Includes internal reprogramming of $484,000 to Education activities from Weapons Program Direction.

b/ Includes appropriation transfer from Department of State of $35 million to support interactions with the Former Soviet Union.

c/ Reflects allocation of bottom line Weapons Activities procurement reform savings ($5,287,000).

d/ Reflects allocation of bottom line Weapons Activities appropriated additional use of prior year balances ($9,413,000).

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Weapons Stockpile Stewardship

FY 1995 Appropriation	$ +1,389,602
- Adjustment - Reflects reduction for Procurement Reform	- 5,287
- Adjustment - Use of Prior Year Balances	+79,725
FY 1995 Adjusted	$ 1,464,040
- Transfer -	0
FY 1995 Comparable	$ 1,464,040
- a. Programs and Initiatives -	+34,927
- b. Core Research and Advanced Technology -	+23,232
- c. Testing Capabilities and Readiness -	-2,435
- d. Basic Equipment -	+10,535
- e. Computers -	-3,000
- f. Testing Capabilities and Readiness -	-7,000
- g. GPD-101, General Plant Projects, VL -	+4,000
- h. 96-D-105, Contained Firing Facility Addition, LLNL -	+6,600
- i. 96-D-104, Processing and Environmental Tech Lab, SNL -	+1,800
- j. 96-D-103, Atlas, LANL -	+8,400
- k. 96-D-102, Stockpile Stewardship Fac. Revit, Phase VI, VL -	+2,520
- l. 95-D-102, CMR Upgrades, LANL -	+6,640
- m. 94-D-102, Nuclear Weapon RD&T Fac. Revit, Phase V, VL -	-800
- n. 93-D-102, Nevada Support Facility, NV -	-1,350

SUMMARY OF CHANGES - Weapons Stockpile Stewardship (cont'd)

- o. 92-D-102, Nuclear Weapon RD&T Fac. Revit, Phase IV, VL	-17,449
- p. 90-D-102, Nuclear Weapon RD&T Fac. Revit, Phase III, VL	+1,300
- q. 88-D-106, Nuclear Weapons RD&T Fac. Revit, Phase II, VL	-2,985
- Indirect Drive	+9,062
- Direct Drive	-65
- KrF Laser	-50
- Light Ion Beams	+1,281
- Capsule Fabrication & Development	+423
- National Ignition Facility	+17,600
- Other	+343
- 2. Capital Equipment	-1,800
- 96-D-111, National Ignition Facility	+37,400
- a. Technology Transfer	+15,611
- 2. Capital Equipment	-2,000
- b. Dose Reconstruction	-200
FY 1996 Obligational Authority	$ 1,606,580
- Adjustment - Use of Prior Year Balances	-21,500
FY 1996 Congressional Budget Request	$ 1,585,080

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ASSISTANT SECRETARY FOR DEFENSE PROGRAMS
(dollars in thousands)

KEY ACTIVITY SUMMARY

WEAPONS STOCKPILE STEWARDSHIP

I. Preface: Weapons Stockpile Stewardship

The end of the Cold War has changed the Nation's national security priorities. The Nation is currently observing a nuclear testing moratorium, working toward an international Comprehensive Test Ban Treaty, and seeking the renewal of the Nuclear Nonproliferation Treaty. No new nuclear weapons systems are currently under development and have not been since FY 1992. Increased emphasis is placed on research in nonproliferation and counterproliferation areas, and on ways to allow for the monitoring of the activities of other nuclear and potential nuclear states while allowing international monitoring of our own facilities without endangering national security.

Against this backdrop, the Nation continues to recognize the requirement for ongoing maintenance of the safety, security, and reliability of the enduring nuclear weapons stockpile as well as maintenance of the capability to respond in a timely and cost-effective manner to any new or unforeseen threat to the Nation's security. The capabilities of the three Defense Programs laboratories, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories, are being constantly reviewed to insure that all required science and technology assets are retained while the weapons activities at the laboratories are right-sized for the needs of the enduring stockpile. Experimental facilities designed to maintain the safety and reliability of the stockpile in conjunction with underground nuclear testing are being reexamined to determine which need to be upgraded and/or replaced in order to meet the needs of the program without the aid of data returned from underground nuclear testing. Consistent with Presidential guidance, the Nevada Test Site is being maintained in a state of operational readiness which will allow its use for any experiments directed by the President which require its unique capabilities.

These changes, underway for some time, require a new way of looking at the scientific requirements and priorities of the Nation's nuclear weapons research and development complex. In his July 3, 1993, announcement of the extension of the moratorium on underground nuclear testing, President Clinton called on the Department to maintain the safety and reliability of the current stockpile using means other than underground nuclear testing. The FY 1994 National Defense Authorization Act also directed the establishment of a stockpile stewardship program.

The FY 1996 budget request responds to the Department's requirement to maintain stewardship of the enduring stockpile while beginning to replace the confidence provided by underground nuclear testing with a science-based understanding of nuclear weapons.

BUDGET STRUCTURE

The funding requested to support this new program of science-based stockpile stewardship is being requested within a new decision unit. This new decision unit, Weapons Stockpile Stewardship, will allow the Department to move forward with this new program without causing unnecessary confusion due to an attempt to fit the new activities into an old budget structure. This change is also consistent with congressional direction to the Department in the FY 1995 Authorization reports from the House and Senate Armed Services Committees to request FY 1996 funding in a structure supportive of the new program.

As such, no funding is requested for FY 1996 activities in either the former Weapons Research and Development decision unit or the Weapons Testing decision unit. All FY 1996 funding is requested within the Weapons Stockpile Stewardship decision unit. Weapons Stockpile Stewardship is divided into four subsections: Core Stockpile Stewardship, Inertial Confinement Fusion, Technology Transfer and Education, and Marshall Islands and Dose Reconstruction (FIGURE 1). The Emergency Responses assets, which were funded through the Weapons Research and Development decision unit (Nuclear Emergency Search Team, Aerial Measurement System, Atmospheric Release Advisory Capability, and Federal Radiological

FIGURE 1

WEAPONS STOCKPILE STEWARDSHIP

Core Stockpile Stewardship	Inertial Confinement Fusion	Technology Transfer & Education	Marshall Islands & Dose Reconstruction
Operating Expense Activities Programs & Initiatives Stockpile Maintenance, Evaluation & Technology Special Projects & Partnerships Threat Assessment & Treaty Implementation Costs Research & Advanced Technology Design Assessment S&T Systems & Components S&T Chemistry and Materials S&T Manufacturing Technologies Testing Capabilities & Readiness Capital Equipment Construction	Operating Expense Activities Indirect Drive with Glass Laser Direct Drive with Glass Laser KrF Laser Light Ion Beams Capsule Fab'n & Development Other ICF Activities National Ignition Facility (OE) Capital Equipment Construction National Ignition Facility	Operating Expense Activities Technology Transfer Education Capital Equipment	Operating Expense Activities Marshall Islands Dose Reconstruction Capital Equipment

Monitoring & Assessment Center) have been moved to the Weapons Stockpile Management decision unit and consolidated with the other Emergency Response assets managed by Defense Programs.

While FY 1996 represents the first year that funding will be requested explicitly within the construct of a science-based stockpile stewardship program, the Weapons Research and Development and Weapons Testing programs actually transitioned to science-based stockpile stewardship in FY 1994 to the extent possible, and will be managed in FY 1995 consistent with the direction the stockpile stewardship program is moving in FY 1996. Programmatically, this will allow a smooth transition into the new program in FY 1996 and insure that activities in FY 1994 and FY 1995 are consistent and supportive of the science-based stockpile stewardship program. It also has the added benefit for the budget request of allowing FY 1994 and FY 1995 budget narrative to be provided on a basis comparable to the FY 1996 narrative. Crosswalk matrices for FY 1994 and FY 1995 funding are also provided (TABLES 1 and 2).

CORE STOCKPILE STEWARDSHIP

Core Stockpile Stewardship provides for the physical and intellectual infrastructure required for the science-based stockpile stewardship program at the Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratories, and the Nevada Test Site.

The Stockpile Stewardship Program is a direct result of President Clinton's goals regarding nuclear weapons, the highest priority of which is to control the proliferation of nuclear weapons and nuclear weapon states. In support of this goal, the President extended the formal moratorium on underground nuclear testing, took steps to initiate discussions toward negotiating a comprehensive ban on underground nuclear tests, directed the Department of Energy to explore other means of maintaining confidence in the safety, reliability, and performance of our stockpiled weapons in the absence of nuclear testing, and directed the Department of Energy to maintain a capability to return to underground nuclear testing.

To meet this direction from the President, the Department of Energy has developed the Stockpile Stewardship program. In order to meet the Presidential requirements, the program requires the continued use of current facilities and programs, a limited set of new experimental and computational facilities and programs, strengthened integration of all program areas, and periodic review and evaluation of all program elements.

Core Stockpile Stewardship, along with Inertial Confinement Fusion, and Technology Transfer and Education, supports the specific activities required for science-based stockpile stewardship. The activities within Core Stockpile Stewardship are divided into five major categories. The first three are Operating Expense funded. The first, **Programs and Initiatives**, supports direct activities associated with the maintenance and support of the current weapons in today's stockpile. Activities include near-term stockpile maintenance, evaluation and assessments, repairs, dismantlement and storage support, and archiving of historical information on the weapons systems; special projects and partnerships; and threat assessment and the costs of implementing nonproliferation treaties at Stockpile Stewardship locations. **Research and Advanced Technology** supports the longer term science and advanced technology development activities required to implement science-based stockpile stewardship including science and technology efforts in the areas of physics, computations and modeling, systems engineering, electronics, photonics, sensors and mechanical components, chemistry and materials, high explosives, special nuclear materials, tritium and manufacturing technologies. The third operating expense category is **Testing Capabilities and Readiness** (TC&R). The TC&R provides the incremental funding required to support experimental activities which require the special and unique capabilities of the Nevada Test Site. However, the majority of the effort in this category provides the infrastructure necessary to maintain the Test Site in a state of readiness to support any needed experimental activity. The final two categories, **Capital Equipment** and **Construction** provide the necessary physical plant to support Core Stockpile Stewardship activities as well as maintain the physical infrastructure of the stockpile stewardship facilities.

INERTIAL CONFINEMENT FUSION

As an integral part of the Stockpile Stewardship program, the Inertial Confinement Fusion (ICF) program is a research and advanced technology development effort that directly benefits the Department's missions in National Security, Science and Technology, Industrial Competitiveness, and Energy Research. The capabilities of the ICF program will provide opportunities to conduct research in physics, which will partially compensate for the loss of data by the cessation of underground nuclear testing. The near-term goal of the program is the successful

TABLE 1

FY 1994 CROSSWALK:
RD&T ADJUSTED APPROPRIATION to WEAPONS STOCKPILE STEWARDSHIP

Dollars in Thousands

	Weapons Research & Development					Subtotal,	Weapons Testing				Subtotal,	TOTAL
	Programs & Initiatives	Core R&AT	Core PA&CE	Inertial Fusion 1/	Technology Transfer 1/	Research & Development	Experimentation	Testing Cap. & Readiness	Testing PA&CE	Marshall Islands	Testing	Stockpile Stewardship
Core Stockpile Stewardship												
Programs & Initiatives												
S. Maintenance, Evaluation & Tech	185,209					185,209	82,287				82,287	267,496
Reconfiguration	5,874					5,874	0				0	5,874
Special Projects & Partnerships	79,676					79,676	0				0	79,676
Threat Assmnt & Implementation Costs	15,701					15,701	0				0	15,701
Subtotal, Programs & Initiatives	286,460	0	0	0	0	286,460	82,287	0	0	0	82,287	368,747
Research & Adv'd Technology												
Design Assessment S&T		200,154				200,154	22,815				22,815	222,969
Systems & Components S&T		105,001				105,001	5,000				5,000	110,001
Chemistry & Materials S&T		53,627				53,627	886				886	54,513
Manufacturing Technologies	0	10,158				10,158	0				0	10,158
Subtotal, R&AT	0	368,940	0	0	0	368,940	28,701	0	0	0	28,701	397,641
Testing Capabilities & Readiness												
Test Site Readiness						0	3,027	207,515			210,542	210,542
Test Site Experimental Support						0	43,385	0			43,385	43,385
Subtotal, TC&R	0	0	0	0	0	0	46,412	207,515	0	0	253,927	253,927
Capital Equipment			53,495			53,495			18,900		18,900	72,395
Construction			113,408			113,408			9,000		9,000	122,408
Subtotal, Core S. Stewardship	286,460	368,940	166,903	0	0	822,303	157,400	207,515	27,900	0	392,815	1,215,118
Inertial Fusion												
Operating Expenses				169,205		169,205					0	169,205
Capital Equipment				15,860		15,860					0	15,860
Subtotal, Inertial Fusion	0	0	0	185,065	0	185,065	0	0	0	0	0	185,065
Technology Transfer & Education												
Technology Transfer					212,733	212,733					0	212,733
Education	20,484					20,484					0	20,484
Capital Equipment					5,000	5,000					0	5,000
Subtotal, Tech Transfer & Education	20,484	0	0	0	217,733	238,217	0	0	0	0	0	238,217
Marshall Islands & Dose Reconstruction												
Operating Expenses						0				6,740	6,740	6,740
Capital Equipment						0			500		500	500
Subtotal, M. Islands & Dose Recon	0	0	0	0	0	0	0	0	500	6,740	7,240	7,240
NIS Industrial Partnership Program						35,000					0	35,000
TOTAL WEAPONS RD&T	306,944	368,940	166,903	185,065	217,733	1,280,585	157,400	207,515	28,400	6,740	400,055	1,680,640
Emergency Response (S. Management)	45,166		6,524			53,690						
						1,334,275						

1/ Includes Operating Expenses and Capital Equipment funding.

TABLE 2

FY 1995 CROSSWALK:
RD&T ADJUSTED APPROPRIATION to WEAPONS STOCKPILE STEWARDSHIP

Dollars in Thousands

	Weapons Research & Development						Subtotal,	Weapons Testing			Subtotal,	TOTAL
	Programs & Initiatives	Core R&AT	Stockpile Stewardship	Core P&CE	Inertial Fusion 1/	Technology Transfer 1/	Research & Development	Testing Cap. & Readiness	Testing P&CE	Marshall Islands	Testing	Stockpile Stewardship
Core Stockpile Stewardship												
Programs & Initiatives												
S. Maintenance, Evaluation & Tech	120,285		127,759				248,044				0	248,044
Reconfiguration	0						0				0	0
Special Projects & Partnerships	70,000						70,000				0	70,000
Threat Assmnt & Implementation Costs	13,057						13,057				0	13,057
Subtotal, Programs & Initiatives	203,342	0	127,759	0	0	0	331,101	0	0	0	0	331,101
Research & AdV'd Technology												
Design Assessment S&T		219,841					219,841				0	219,841
Systems & Components S&T		94,739					94,739				0	94,739
Chemistry & Materials S&T		48,383					48,383				0	48,383
Manufacturing Technologies		14,100					14,100				0	14,100
Subtotal, R&AT	0	377,063	0	0	0	0	377,063	0	0	0	0	377,063
Testing Capabilities & Readiness												
Test Site Readiness							0	160,000			160,000	160,000
Test Site Experimental Support			24,660				24,660	0			0	24,660
Subtotal, TC&R	0	0	24,660	0	0	0	24,660	160,000	0	0	160,000	184,660
Capital Equipment				51,820			51,820		15,000		15,000	66,820
Construction				64,129			64,129		21,000		21,000	85,129
Subtotal, Core S. Stewardship	203,342	377,063	152,419	115,949	0	0	848,773	160,000	36,000	0	196,000	1,044,773
Inertial Fusion												
Operating Expenses					166,755		166,755				0	166,755
Capital Equipment					9,718		9,718				0	9,718
Subtotal, Inertial Fusion	0	0	0	0	176,473	0	176,473	0	0	0	0	176,473
Technology Transfer & Education												
Technology Transfer						209,794	209,794				0	209,794
Education	20,000						20,000				0	20,000
Capital Equipment						6,000	6,000				0	6,000
Subtotal, Tech Transfer & Education	20,000	0	0	0	0	215,794	235,794	0	0	0	0	235,794
Marshall Islands & Dose Reconstruction												
Operating Expenses							0			6,530	6,530	6,530
Capital Equipment							0		470		470	470
Subtotal, M. Islands & Dose Recon	0	0	0	0	0	0	0	0	470	6,530	7,000	7,000
TOTAL WEAPONS RD&T	223,342	377,063	152,419	115,949	176,473	215,794	1,261,040	160,000	36,470	6,530	203,000	1,464,040
Emergency Response (S. Management)	48,010			7,600			55,610					
							1,316,650					

1/ Includes Operating Expense and Capital Equipment funding.

demonstration of a thermonuclear ignition and moderate fusion gain in a laboratory environment. A significant step in achieving this goal is the initiation of a new construction line item in FY 1996 for the National Ignition Facility.

The ICF program contributes to the maintenance of the Nation's nuclear weapons core competency and capability through its pursuit of thermonuclear fusion. Because of its conceptual similarity to certain aspects of nuclear weapons, the achievement of thermonuclear fusion will provide nuclear weapon physics data, particularly in the area of secondary design, and aboveground weapon effects simulation capabilities. The ICF program also helps to maintain the Nation's nuclear weapon competence by attracting top minds in physics and related disciplines to work at the weapons laboratories.

TECHNOLOGY TRANSFER & EDUCATION

The third major category within Weapons Stockpile Stewardship includes two programs that are directed at sharing expertise and scientific developments in the laboratories with the private sector. **Technology Transfer** strengthens the science and technology base and nuclear weapons core competencies through participation in cooperative, dual-benefit partnerships with private industry. In accordance with the Competitiveness Technology Transfer Act of 1989 (Public Law 101-189), the Technology Transfer program promotes the transfer of unclassified, non-sensitive technology, developed through research funded by other portions of the defense budget, from the weapons complex facilities to the private sector. The Technology Transfer program works with the private sector to develop partnerships which benefit and advance U.S. industrial competitiveness and economic security while gaining an infusion of intellectual and capital resources from industry, which enhance the DP core competencies and technology infrastructure necessary to achieve the national security mission. **Education** initiatives support crosscutting science education activities throughout the DP laboratories and the Nevada Operations Office ranging from kindergarten to graduate school. Special emphasis is placed on providing research support and teacher programs to insure diverse access to quality science education. In this era of global change, the Nation's educational programs must reflect national priorities. Tightened budgets, global economic competition, leap frogging technologies, new national security policies--these new realities ultimately affect all Americans. The DOE/DP Programs is channeling its unique capabilities and technologies toward educational programs that will transform these new realities into viable benefits to the Nation.

MARSHALL ISLANDS & DOSE RECONSTRUCTION

The Marshall Islands program is conducted by the Office of Environment, Safety and Health. The Marshall Islands program supports statutory responsibilities promulgated in Public Law 99-239, the "Compact of Free Association." As required by P.L. 99-239, the Department is responsible for (1) providing medical care to affected persons who were directly or indirectly exposed to radiation and to identify any radiation related illness and disease; (2) conducting radiological monitoring of the environment to determine the presence and levels of residual radioactivity in the four affected atolls; and (3) conducting radiation dose assessment of the affected populations to determine radiation exposure. The Department's health and environment program supports continued medical surveillance of exposed people and environmental characterization. These programs are being strengthened in the Office of Health to better reflect the increased emphasis being placed on resettlement of the people of the Marshall Islands.

The Office of Environment, Safety and Health is also responsible for the management and conduct of offsite environmental dose reconstruction related to health outcome studies for populations potentially affected by activities at the Nevada Test Site.

FY 1996 REQUEST

CORE STOCKPILE STEWARDSHIP

The FY 1996 request for Weapons Stockpile Stewardship has several new initiatives required for science-based stockpile stewardship. Within Core Stockpile Stewardship these include first year funding for the Accelerated Strategic Computing Initiative, ownership of the Los Alamos Neutron Scattering Center/Los Alamos Meson Physics Facility complex, and new construction starts for three experimental facilities.

The **Accelerated Strategic Computing Initiative** (ASCI) is a broad-based program to advance the state of high performance computing at the defense laboratories. ASCI will produce the cutting edge computer modeling and simulations capabilities required to shift from nuclear test-based

methods to computer-based methods to test the performance of systems. ASCI will focus on developing the computer simulation capabilities to establish safety, reliability, and performance of weapons in the stockpile, virtual prototyping for maintaining the current and future stockpile, and connecting output from complex experiments to system behavior. Accelerating our computer modeling, application code development, and computer facility efforts will help to maintain a high degree of confidence in the safety, security, and reliability of the enduing nuclear weapons stockpile. Substantial improvements are required in computer capabilities. Thousand-fold increases in computer speed and data storage capacity are needed for more complete physics modeling for greater accuracy. To better represent the underlying scientific principles and data, computer codes need to be modified to take advantage of new computer architectures. Funding for ASCI, $45 million in FY 1996, is included in Programs & Initiatives: Special Projects and Partnerships.

On another front of the science-based stockpile stewardship program, Defense Programs is increasing its participation by $25 million in the **Los Alamos Neutron Scattering Center (LANSCE)**. The LANSCE is potentially a high benefit experimental platform for science-based stockpile stewardship immediately available without the delays and costs associated with new construction. The FY 1996 research activities are planned to demonstrate the concept of fast neutron radiography of weapons systems to detect small scale (1 mm) defects that could serve as an indicator of major component deterioration or damage. If successful, this test concept could reduce the need for other destructive, and more expensive, weapons surveillance methods. The LANSCE will also be valuable as a materials research facility used in such areas as providing data for high explosive safety calculations, investigating spatially resolved measurements of strain in materials, and determining the bulk texture of materials. Funding for LANSCE is included in Research & Advanced Technology: Design Assessment Science & Technology.

The more long-term requirements of science-based stockpile stewardship are addressed with the request for first year funding of three new construction projects and the expansion of scope of one other existing project. The **Processing and Environmental Technology Laboratory (PETL)**, Sandia National Laboratories (96-D-104), will allow the development, characterization, and application of modern processing methods that significantly reduce risk to the environment, public and plant personnel and are appropriate for smaller production capacity. An example is the integration of real-time, on-line diagnostic test structures in processing lines for "self-identification" of processing problems. The total estimated cost (TEC) of PETL is $45.9 million. Project 96-D-103, **ATLAS**, TEC $43.3 million, will provide the Los Alamos National Laboratory with enhanced pulsed power experimental capability to support the above ground experiments required to provide some kinds of data no longer available from underground nuclear testing. The **Flash X-Ray (FXR)** facility will be upgraded for an additional $5.0 million as part of the ongoing Lawrence Livermore National Laboratory Site-300 Revitalization activities (subproject within 90-D-102, NWRD&T Facilities Revitalization, Phase III) to provide an ability to produce two rapid succession pulses. This single-axis capability will allow for time phased investigations of the implosion process. A related project, 96-D-105, **Contained Firing Facility**, TEC $47.9 million, will enclose the testbed of the FXR facility as a preventive measure as we anticipate future requirements to reduce environmental impact and to reduce impact (visual and auditory) of Site 300 operations on encroaching residential areas.

Two other construction new starts are requested within Core Stockpile Stewardship to provide for the ongoing infrastructure, environment, safety, and health requirements of the laboratories. Both requested projects are at Los Alamos National Laboratory and are in 96-D-102, Stockpile Stewardship Facilities Revitalization, Phase VI. **Water Well Replacement, GR-1 through GR-4**, TEC $16.8 million, will replace wells originally completed between 1950 and 1952 to ensure a continuous and reliable water supply for the laboratory. **Fire Protection Improvements**, TEC $16.9 million, will improve water storage capabilities and associated distribution system piping to internal sprinkler and/or fire alarm systems in approximately 28 buildings. Also included in this project is the provision to 144 buildings of lightning protection systems or additions to existing systems.

The **Nevada Test Site** will be maintained in a state of readiness that would permit a resumption of testing within 24-36 months.

INERTIAL CONFINEMENT FUSION

The FY 1996 request continues to support the ICF base program and includes $37.4 million to initiate a construction for the **National Ignition Facility** (NIF) (96-D-111), as well as operating expense funds needed to support the research and development activities associated with the NIF. The NIF has a total estimated cost of $842 million and is expected to take about seven years to build. Its mission will be to produce ignition and modest energy gain in inertial fusion targets in support of national security and civilian objectives. It is a key element in DOE's capability to maintain expertise and computational tools necessary to ensure that the enduring stockpile remains safe, secure and reliable without underground nuclear testing. NIF is also required for scientific evaluation of inertial fusion energy which is being pursued by the DOE, along with magnetic fusion energy, as distinct and separate approaches to fusion energy, as called for in the National Energy Policy.

While the primary thrust of the core ICF program is toward ignition, the program continues to research the indirect drive with glass laser driver, the direct drive with glass laser driver, the krypton fluoride laser, and the light ion beam driver technologies.

TECHNOLOGY TRANSFER AND EDUCATION

Within the Technology Transfer program, $14.9 million will fund new projects in support of the Presidential commitment to the New Generation Vehicle Initiative. The program will finance both ongoing and new Cooperative Research and Development Agreements (CRADA) in FY 1996. The request supports the Presidential commitment for the National Information Infrastructure, as well as the Secretary's commitments to the High Performance Computing Initiative, the American Textile Partnership (AMTEX), the Semiconductor Modeling Center and the Health Care Technologies initiative.

The Education program is continued at the FY 1995 level of effort.

MARSHALL ISLANDS AND DOSE RECONSTRUCTION

The Marshall Islands program maintains the FY 1995 level of effort and will continue to support the conduct of two environmental monitoring missions to the Marshall Islands, two medical surveillance missions, and a whole-body counting and urine bioassay mission to the Marshall Islands. Support for Rongelap Resettlement activities will continue. The Dose Reconstruction effort associated with the Nevada Test Site will be completed in FY 1995 and no funds are requested for this activity in FY 1996, reducing the request for this category by $200,000.

Environment, Safety and Health

Within the requests for Stockpile Stewardship programs, the FY 1996 Budget includes sufficient funding for Environment, Safety and Health (ES&H) programs at Lawrence Livermore, Los Alamos, and Sandia National Laboratories and the Nevada Test Site (NTS) to address all of the significant issues known or anticipated during the fiscal year. This determination was made by utilizing a comprehensive planning process developed for the Department by the Office of Environment, Safety and Health. The ES&H Management Planning Process was used to identify needs, collect data on estimated costs and rank individual tasks using a risk based prioritization model. The resulting prioritized work lists were then compared to anticipated funding. Those tasks initially determined not to require funding were individually reanalyzed to ensure that all necessary work would be adequately funded. Adjustments to the plan will be made throughout the year to respond to changing priorities without jeopardizing ongoing priority tasks. Continuous improvements will be made to the planning process so that it can also be used to track progress and assess performance across a wide spectrum of ES&H activities at each site.

Core ES&H activities which include all of the routine ES&H support activities essential to site operations will account for the majority of the total operating dollars in each site's FY 1996 ES&H Management Plan. Significant issues facing all Stockpile Stewardship facilities in FY 1996 are the implementation of rules for nuclear facilities and adjusting ES&H programs and resources to meet the needs of changing missions and programs. There are, however, several significant and unique activities identified in the plan that will be the focus of laboratory ES&H programs and DOE oversight. These include:

Los Alamos National Laboratory - A new Site-Wide Environmental Impact Statement (SWEIS), initiated in FY 1994, is scheduled for completion in FY 1997. In FY 1995, a remedial environmental impact statement for the Dual-Axis Radiographic Hydrotest Facility currently under construction was begun and will be completed before the decision is made to begin operation of the facility. There are also ongoing ground water protection and air monitoring upgrade programs that will continue throughout FY 1996. Continued growth is expected in the ES&H activities associated with operating nuclear facilities and seismic safety. Upgrades to improve the safety and reliability of the Chemistry and Metallurgy Research (CMR) facility will continue in FY 1996.

Sandia National Laboratories - The Power System Modernization Project which will bring electrical systems sitewide into compliance with national electrical safety standards will continue in FY 1996.

Nevada Test Site - FY 1996 will see a major increase in the support of NEPA activities associated with the Site-Wide Environmental Impact Statement for the NTS. Construction of the Nevada Support Facility will be nearing completion in FY 1996. This new facility will house Federal employees and will replace their current facilities which do not meet national safety standards for fire protection.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five Year Plan is currently being developed by the Department and should be submitted in the near future.

II. A. Summary Table: Weapons Stockpile Stewardship

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
A. Core Stockpile Stewardship				
1. Operating Expense				
a. Programs and Initiatives	$ 368,747	$ 331,101	$ 366,028	$ 34,927
b. Core Research and Advanced Technology	397,641	377,063	400,295	23,232
c. Testing Capabilities and Readiness	253,927	184,660	182,225	-2,435
Subtotal, 1. Operating Expense	$ 1,020,315	$ 892,824	$ 948,548	$ 55,724
2. Capital Equipment				
d. Basic Equipment	$ 32,895	$ 28,820	$ 39,355	$ 10,535
e. Computers	20,600	23,000	20,000	-3,000
f. Testing Capabilities and Readiness	18,900	15,000	8,000	-7,000
Subtotal, 2. Capital Equipment	$ 72,395	$ 66,820	$ 67,355	$ 535
3. Construction				
g. GPD-101, General Plant Projects, VL	$ 16,500	$ 8,500	$ 12,500	$ 4,000
h. 96-D-105, Contained Firing Facility Addition, LLNL	0	0	6,600	6,600
i. 96-D-104, Processing and Environmental Tech Lab, SNL	0	0	1,800	1,800
j. 96-D-103, Atlas, LANL	0	0	8,400	8,400
k. 96-D-102, Stockpile Stewardship Fac. Revit, Phase VI, VL	0	0	2,520	2,520
l. 95-D-102, CMR Upgrades Project, LANL	10,250	3,300	9,940	6,640
m. 94-D-102, Nuclear Weapon RD&T Fac. Revit, Phase V, VL	4,000	13,000	12,200	-800
n. 93-D-102, Nevada Support Facility, NV	4,000	17,000	15,650	-1,350
o. 92-D-102, Nuclear Weapon RD&T Fac. Revit, Phase IV, VL	27,479	17,449	0	-17,449
p. 90-D-102, Nuclear Weapon RD&T Fac. Revit, Phase III, VL	20,555	4,900	6,200	1,300
q. 88-D-106, Nuclear Weapons RD&T Fac. Revit, Phase II, VL	39,624	20,980	17,995	-2,985
Subtotal, 3. Construction	$ 122,408	$ 85,129	$ 93,805	$ 8,676
Subtotal, A. Core Stockpile Stewardship	$ 1,215,118	$ 1,044,773	$ 1,109,708	$ 64,935
B. Inertial Confinement Fusion				
1. Operating Expenses				
Introduction	$ 0	$ 0	$ 0	$ 0
Indirect Drive	94,977	93,400	102,462	9,062
Direct Drive	15,753	18,265	18,200	-65
KrF Laser	9,565	8,050	8,000	-50
Light Ion Beams	25,221	25,500	26,781	1,281

II. A. Summary Table: Weapons Stockpile Stewardship - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capsule Fabrication & Development	14,117	13,100	13,523	423
National Ignition Facility	6,000	6,000	23,600	17,600
Other	3,572	2,440	2,783	343
Subtotal, 1. Operating Expenses	$ 169,205	$ 166,755	$ 195,349	$ 28,594
2. Capital Equipment	$ 15,860	$ 9,718	$ 7,918	$ -1,800
3. Construction				
96-D-111, National Ignition Facility	0	0	37,400	37,400
Subtotal, 3. Construction	$ 0	$ 0	$ 37,400	$ 37,400
Subtotal, B. Inertial Confinement Fusion	$ 185,065	$ 176,473	$ 240,667	$ 64,194
C. Technology Transfer and Education				
1. Operating Expense				
a. Technology Transfer	$ 212,733	$ 209,794	$ 225,405	$ 15,611
b. Education	20,484	20,000	20,000	0
Subtotal, 1. Operating Expense	$ 233,217	$ 229,794	$ 245,405	$ 15,611
2. Capital Equipment	$ 5,000	$ 6,000	$ 4,000	$ -2,000
Subtotal, C. Technology Transfer and Education	$ 238,217	$ 235,794	$ 249,405	$ 13,611
D. Marshall Islands and Dose Reconstruction				
1. Operating Expense				
a. Marshall Islands	$ 6,000	$ 6,330	$ 6,330	$ 0
b. Dose Reconstruction	740	200	0	-200
Subtotal, 1. Operating Expense	$ 6,740	$ 6,530	$ 6,330	$ -200
2. Capital Equipment	$ 500	$ 470	$ 470	$ 0
Subtotal, D. Marshall Islands and Dose Reconstruction	$ 7,240	$ 7,000	$ 6,800	$ -200
E. NIS Industrial Partnering Program				
1. Operating Expense	$ 35,000	$ 0	$ 0	$ 0
Subtotal, E. NIS Industrial Partnering Program	$ 35,000	$ 0	$ 0	$ 0
Use of Prior Year Balances	$ -90,000	$ -79,725	$ -21,500	$ 58,225
Total, Weapons Stockpile Stewardship	$ 1,590,640	$ 1,384,315	$ 1,585,080	$ 200,765

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
a. Programs and Initiatives	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY
	SURVEILLANCE & EVALUATION, MAINTENANCE & SUPPORT: FY 1994 activities continued to support responsibility for certification of the performance and safety of nuclear weapons from production of the first unit to dismantlement of the last. The Stockpile Maintenance and Surveillance Program provides support of all activities required to continue this certification for the lifetime of all weapon systems. - Provided interface between theoretical design, engineering design and production plants. - Evaluated, coordinated, and approved deviation from, or revision to, established weapons design requirements. - Provided liaison with the Department of Defense on maintenance issues such as review of publications, response to unsatisfactory reports, limited life component exchange, and reservoir life extensions. - High fidelity Joint Test Assembly (JTA) program was initiated to enhance the flight test program to more thoroughly assess reliability.	SURVEILLANCE & EVALUATION, MAINTENANCE & SUPPORT: FY 1995 activities will continue to support responsibility for certification of the performance and safety of nuclear weapons from production of the first unit to dismantlement of the last. The Stockpile Maintenance and Surveillance Program provides support of all activities required to continue this certification for the lifetime of all weapon systems. - Continue production plant liaison to support weapons rebuilds, production of JTA components and assemblies, and new build and reclamation of reservoirs. - Start new initiative in enhanced surveillance to develop tools to better predict onset of aging effects and their impact on safety, reliability and performance. - Continue High fidelity JTA effort. - Conduct a joint flight test assembly flight test of the B83 against a hard irregular target. Conduct a High Fidelity Flight Test of the W87. - Deactivate buildings 854, 855, and 858 at Lawrence Livermore's Site 300.	SURVEILLANCE & EVALUATION, MAINTENANCE & SUPPORT: FY 1996 activities will continue to support responsibility for certification of the performance and safety of nuclear weapons from production of the first unit to dismantlement of the last. The Stockpile Maintenance and Surveillance Program provides support of all activities required to continue this certification for the lifetime of all weapon systems. - Activities will include the collection and review of data from stockpile returns, the support of surveillance cycle reports and reliability estimates, and support of upgrades to weapon systems. - Continued support of efforts to increase command and control of nuclear weapons, including the FARR study, the DOE Command and Control Steering Group, the Use Control Project Officers Group, the User Control Effectiveness Committee, and the DOE Assessment Project. - Engineering support for all fielded PAL, Command Disable, AMACS, and AN/GWM-9 equipment including repair and certification, failure analysis,

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	- A new scanning probe microscope capable of performing both scanning tunneling and atomic force microscopy under ultrahigh vacuum has been installed and tested to study nucleation and growth on surfaces with near atomic resolution for the study of corrosion issues. - Completed Cycle 7 Pantex report for the W87. Established the Lifetime Hydrotest Program for enhanced surveillance of the enduring stockpile. - Designed, fabricated and assembled the high fidelity flight test units for a flight test of the W87 to be conducted in FY 1995. - Increased number of courses available in the National Nuclear Safety Training Program to sixty-six. - Development and production of the STRATCOM Secure Recode System (SSRS) was completed and the system was successfully fielded at air bases under the USAF Air Combat Command. - Work continued on Theater Secure Recode System (TSRS) which will provide nuclear capable CINCs with the ability to perform secure, no knowledge and end-to-end encrypted, PAL recode and verification operations.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)	redesign and retrofit, and lost code recovery procedures. - Continue STRATCOM Secure Recode System (SSRS) and theater Secure Recode System (TSRS) efforts to provide changing and verifying PAL combinations, implementing end-to-end encryption, and no-knowledge encryption capability.
	RETIREMENT/DISMANTLEMENT/STORAGE: Continue support for DOE dismantlement program. This includes direct support of war reserve warhead disassembly, disposal and storage efforts at Pantex, Y-12, and DOE/AL, and development of advanced technology to improve	RETIREMENT/DISMANTLEMENT/STORAGE: Continue support for DOE dismantlement program. This includes direct support of war reserve warhead disassembly, disposal and storage efforts at Pantex, Y-12, and DOE/AL, and development of advanced technology to improve	RETIREMENT/DISMANTLEMENT/STORAGE: Continue support for DOE dismantlement program. This includes direct support of war reserve warhead disassembly, disposal and storage efforts at Pantex, Y-12, and DOE/AL, and development of advanced technology to improve

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	dismantlement operations at integrated contractor plants. - Dismantlement support to Pantex continued by providing engineering and other technical support for pit storage, risk assessment and response to oversight activities. - Supported the Quality Evaluation for Dismantlement (QED) process. - Participated with Pantex in the establishment of the "Seamless Safety" demonstration project that developed the architecture for the overall safety process using the B61-0 as the demonstration weapon program. - Performed various levels of QED's on the W48, W70, W71, W79 and W68. Initiated parts/materials data base for LLNL warheads in the dismantlement. - Completed design of a system to provide rapid, safe removal of high value materials, recyclable materials, or hazardous materials, including radioactive, energetic, flammable, PCB containing materials from weapon components. - Investigated alternatives to open burn or open detonation of small energetic components at Pantex. - Automation and robotics methods for use in plutonium processing and storage were investigated. In particular, design of robotics methods for the transfer from ALR-8 containers to AT-400A containers was initiated.	dismantlement operations at integrated contractor plants. - Develop a base hydrolysis HE disposal pilot project at Pantex. - Perform a Qualification Evaluation for Dismantlement (QED) of the B61-0,2,5. Continue QED's for W48, W79, W70, W55, W68, W56, and W62. - Prepare for B61 Dismantlement by the "Seamless Safety" project. Initiate and complete a revised dismantlement process for the W56 using criteria developed by the SS-21 (Seamless Safety) project. - The software/hardware design package for the weapon component hazardous separation system, including pattern recognition system and an extended database, will be completed and operator training will be provided to Pantex. - Robotics will be developed and demonstrated to perform handling and disassembly of weapon component gas generators at Pantex, allowing for propellant disposal and ease of housing material recycling. - Design definition will be completed for a plutonium management system to enhance safety, security, and monitorability. Laboratory demonstration of prototype is scheduled for FY 1995, with full demonstration at Pantex in FY 1996.	dismantlement operations at integrated contractor plants. FY 1996 Activities will include: - The documentation of a full-scale pit disablement test and a proposal for how this could be utilized in multinational monitored pit storage. - Produce generic design for a monitor system for a new storage facility and demonstration hardware as needed. - Continue efforts to develop robotic capabilities for dismantlement and demilitarization activities. - Develop a generic safety process applicable to the assembly and disassembly of weapon systems at the Pantex Plant and demonstrate on the B61-0 weapon system. - Continue Quality Evaluation for Dismantlement (QED) and seamless safety initiatives.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) STUDIES, ENGINEERING DEVELOPMENT & TECHNOLOGY DEMONSTRATION: FY 1994 Engineering development activities included the maintenance of capabilities to assess feasibility issues of nuclear weapons technology applications including design, preliminary system integration, surety, lethality, and operations; responded to directed nuclear weapons studies; maintained dialogue with DoD in the assessment of nuclear weapon applications, deterrent value of nuclear weapons, nuclear force structure changes, and operational issues; and supported long range planning issues. - Surety 2000 safety module completed and the Surety 2000 Integration of the Use Control and Security models are continuing. - WAP In-depth Studies of the W87, W80, and W76 completed and sent to DoD. - Definition of the W78 and W80 combined abnormal environments test continue. - Successful implementation of the Personnel-Assurance-Program (PAP) for PAP employees and supervisors. - Initiated a pilot study to develop methodologies for performing full probabilistic risk assessments for Nuclear Explosive Safety Studies (NESS). - Combined the Detonation Shock	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) STUDIES, ENGINEERING DEVELOPMENT & TECHNOLOGY DEMONSTRATION: FY 1995 Engineering development activities will include the maintenance of capabilities to assess feasibility issues of nuclear weapons technology applications including design, preliminary system integration, surety, lethality, and operations; respond to directed nuclear weapons studies; maintain dialogue with DoD in the assessment of nuclear weapon applications, deterrent value of nuclear weapons, nuclear force structure changes, and operational issues; and support long range planning issues. - Complete and implement Surety 2000 integrated module. - Complete and transmit to DoD WAP In-depth Studies for the B53, W78, W88 and B61-3, 4,7,10. - Complete first in series of W78/W80 combined abnormal environment tests. - Continue implementation of Nuclear Explosive Safety Studies. - Continue implementation of Personnel-Assurance-Program. Improve training for supervisors. - Introduce gas generation, coupling (through acoustic transport) of the gas generation with the surrounding medium, and erosive burning into Statistical Crack Mechanics model and shear models.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) STUDIES, ENGINEERING DEVELOPMENT & TECHNOLOGY DEMONSTRATION: FY 1996 Engineering development activities will include the maintenance of capabilities to assess feasibility issues of nuclear weapons technology applications including design, preliminary system integration, surety, lethality, and operations; respond to directed nuclear weapons studies; maintain dialogue with DoD in the assessment of nuclear weapon applications, deterrent value of nuclear weapons, nuclear force structure changes, and operational issues; and support long range planning issues. - Technology Demonstration activities will continue with MAST and PRESS. MAST, Multi-Application Surety Technology, is a system integration of weapon technologies intended to be implemented, either in total or in part, for maintenance or improvement of stockpile systems. FY 1996 activities will include conducting engineering design and development of selected components to be ready for stockpile inclusion including ceramic coating by FY 1997, and Acorn for the B61 limited life components (LLCs) by FY 1999. FY 1996 Studies activities will include: - The incorporation of non-intrusive target based diagnostics to verify component function for realistic non-instrumented payloads carried in Joint Operational System tests.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	Dynamics model with a robust numerical algorithm for solving problems that contain complex topological changes such as wave merging and breaking. - Developed a technique for accurately measuring pressures and temperature in diamond anvil cells. - Developed the capability to make simultaneous measurements of strain field (local and global) and temperature field in explosives under dynamic conditions. - Demonstrated that the Statistical Crack Mechanics Model can qualitatively describe the incipient reaction behavior in impacted charges. - Supported the W76/W88 Nearby Explosion Study. Areas of investigation included preliminary nuclear safety assessment of SLBM warheads for multiple fragment impact, cylindrical fragment generation test, development of theoretical fragmentation model, and developed process trees/program trees for accident sequences and probability assessment. - Supported Product Realization Teams in the MAST program to develop the system and components with modern concurrent engineering practices adopted by the DOE for the downsized complex. - Developed an ion source and robotics spray capability for the ceramic-coated fire resistant pit program. - Participated on a six-month study	- Conduct experiments on the compaction, heating, and reaction of porous explosive compacts subjected to shock loading. Use to guide theoretical efforts in modeling of Detonation Shock Dynamics and impact response explosives. - Continue W76/W88 Nearby Explosion Study. Areas of interest will be non-rocket motor accident scenarios, cylindrical experiments to characterize fragments and develop methodology, conduct full up experiments, and continue nuclear safety assessment. - Demonstrate a fire-resistant coating capability for the existing pits in LANL air-carried, insensitive high explosive systems that can be incorporated transparently in the existing primaries without further nuclear tests. - Determine fieldable enhancement to the safety and use control of the B61 that could be accomplished along with required retrofits for the Cat F PAL system. - Perform shock propagation and structural response calculations in support of Defense Nuclear Agency (DNA) conventional Earth Penetrator Weapon effectiveness studies. - Evaluate collateral effects (fallout, dispersal of radioactive or toxic materials, blast) from partially successful render-safe operations against terrorist nuclear/chemical/biological devices and from conventional or nuclear attack of proliferant countries.	- The support of the Strategic Bomber Nuclear Weapon Safety Study, which is a Defense Nuclear Agency/DOE assessment to qualify plutonium dispersal for the strategic bomber platform with operational loadouts of nuclear weapons. - Evaluation of new and revised stockpile-to-target sequence (STS) accident scenarios for combined abnormal environments for the enduring stockpile. - Evaluate new and revised inadvertent nuclear detonation pathways (accident scenarios) for combined abnormal environments leading to possible production of nuclear yield. - As part of a follow on to a Phase 2 study, identify and characterize alternate reentry systems for use on the Trident II Strategic Weapons System making maximum use of existing Department of Defense hardware.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	requested by Department of Defense to examine issues related to developing possible replacements for warheads (robust warheads assessment), in the absence of nuclear testing. - Participated on Defense Nuclear Agency-lead team to develop NEMESIS, a new nuclear weapon effects code incorporating best current knowledge of low yield and shallow buried shock and fallout effects. - Started W87 structural upgrade project in response to an Air Force request for enhanced stockpile-to-target sequence requirement. Implementation of upgrade is expected in FY 1995. - Designed and completed the "Box-of-Rocks" cratering experiment on Nova laser facility to support DNA cratering studies. - Constructed new Nova one-beam chamber to support DNA experiments on ground coupling. - Phase 1 study of revolutionary surety for a B61-like bomb and a W80-like cruise missile warhead and the Precision Low Yield Warhead (PLYWD) Phase 1 study for a low collateral damage weapon were completed. - SLBM Phase 2 study to identify and characterize a broad range of alternative warheads for use on the Trident II was completed. An SLBM Phase 2 study to identify and characterize alternative to the W76/Mk4 and W88/Mk5 reentry systems was also completed.	- Continue PRESS/CM technology demonstration project with the specific goals of demonstration of use control, testing of fire resistance, execution of a major system safety test, completion of physics and engineering computer analysis. - Phase 2 High-Power Radio-Frequency Weapon Study will be completed. - Trilab peer review of SLBM candidate warheads will be completed and subsequent work on a safety capsule will be initiated.	STOCKPILE MAINTANENCE, EVALUATION & TECHNOLOGY (continued)

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
a. Programs and Initiatives	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) STOCKPILE IMPROVEMENT PROGRAM: FY 1994 efforts continued to maintain the ability and technologies to improve the surety of the enduring stockpile by replacing or modifying nonnuclear components. FY 1994 activities included: - Continued effort in accident resistant containers and have completed the design, production, and documentation of TARC containers for the W62 and W78. - Continued the Aircraft Compatibility Project to establish that nuclear weapon carrying aircraft have been properly designed to be compatible with weapon electrical and mechanical interfaces and to continue monitoring the compatibility throughout the lifetime of the weapon system. Efforts included first flights of Vibration Flyaround Test Device, electrical interface tests on the F16 and B1B, and preliminary electrical interface tests on the B2. - Continued the B61-3,4,10 Alt335 stockpile improvement effort. - Four B83/Common Radar Flight Tests were completed for Radio Frequency Test Units 49 through 52.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) STOCKPILE IMPROVEMENT PROGRAM: FY 1995 efforts will continue to maintain the ability and technologies to improve the surety of the enduring stockpile by replacing or modifying nonnuclear components. FY 1995 activities will include: - Continue container characterization support to complete TARC electrical studies for Defense Nuclear Agency, provide preliminary container designs for the Excess Nuclear Material Disposition Project, and complete design of FIESTA auxiliary container. - Continue efforts in aircraft compatibility. Efforts will include B2 Electrical Interface Tests, Full System Drop Tests, and ACCD Release. Certification activities will also continue with regard to the use of B53s, B61s, W80s, and B83s on B2s, B1Bs, F16s, F15s, F111s, and MRCAs. - Preliminary Project Plan, Quality Plan, and System Requirements Definition will be prepared for the Development Engineering and System Integration of Modern Surety Upgrades to the B61-3,4,10.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) STOCKPILE IMPROVEMENT PROGRAM: FY 1996 efforts will continue to maintain the ability and technologies to improve the surety of the enduring stockpile by replacing or modifying nonnuclear components. FY 1996 activities will include: - Review and study of requirements of the enduring weapon systems. - Continue the Quality Improvement Program for the B83 modern strategic bomb. The QIP will have three phases, the retrofit for the spin rocket motor, the rebuild of selected B83-0 and B83-1 units, and the retrofit of the MC3049 radar with the MC4033 Common Radar. - Continue the Aircraft Compatibility Project to establish that nuclear weapon carrying aircraft have been properly designed to be compatible with weapon electrical and mechanical interfaces and to continue monitoring the compatibility throughout the lifetime of the weapon system.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
4. Programs and Initiatives (Cont'd)	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) ARCHIVING: Archiving information on stockpile weapons systems, particularly underground nuclear test data is a time-urgent project as the most knowledgeable staff either have just retired or are nearing retirement age. A substantial amount of data exists from almost five decades of nuclear testing, design and production. This data must be assembled into a comprehensive database to permit retrieval and analysis. With the continual turnover in personnel and decay of "corporate memory", an accurate, detailed, and comprehensive database will be essential. Efforts at the laboratories to capture and preserve design, engineering, and nuclear test data as well as the expertise of the current and just retired staff may be separated into three categories: (1) Codifying old nuclear test data, much of which has been stored in fragile formats, (2) Capturing the unwritten expertise of scientists, engineers, and technicians involved in the research, development, and testing of nuclear weapons, and (3) Developing modern, interactive computer-based storage and retrieval systems. With the retirement and/or foreseen departure from the weapons program of a large fraction of the nuclear weapons cadre, archiving of data and experience is a time-urgent activity. - Organized two data archiving workshops with participation from the	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) ARCHIVING: Continue the effort of archiving underground nuclear test, weapon design, and production data. Projects will include: - Retrieve, actively review, and stabilize engineering and underground test methods and data for all operational and technical areas involved in past underground nuclear testing. - Continue activities for a demonstration system for a prototype retrieval/display utility for textual and graphical information. - Reanalyze with modern calculational tools data from nuclear testing and hydrodynamic experiments from the nuclear weapons development program. - Continue the Knowledge Preservation Project to capture, in retrievable form, undocumented nuclear weapon component design information. - Continue sponsorship of data archiving workshops with participation from the weapons laboratories and the production sites. Finish the recovery and stabilization of all relevant data related to the W76. Begin a similar effort for the B61. Complete the analysis and documentation of the SNL data from four additional weapon effects tests: MINI JADE,	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) ARCHIVING: Archiving information on stockpile weapons systems, particularly underground nuclear test data is a time-urgent project as the most knowledgeable staff either have just retired or are nearing retirement age. A substantial amount of data exists from almost five decades of nuclear testing, design and production. This data must be assembled into a comprehensive database to permit retrieval and analysis. With the continual turnover in personnel and decay of "corporate memory", an accurate, detailed, and comprehensive database will be essential. FY 1996 efforts will include: - Retrieve, actively review, and stabilize engineering and underground test methods and data for all operational and technical areas involved in past underground nuclear testing. This effort will ensure a continuing capability to safely resume testing through documentation of the techniques and procedures used in underground nuclear tests. - Continue efforts in the design of a demonstration system for a prototype retrieval/display utility for textual and graphical information. Issues of importance will include connectivity, security, and useful user interface. - Continue to reanalyze with modern calculational tools data from nuclear testing and hydrodynamic experiments from the nuclear weapons development

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	weapons laboratories and the production sites. - Supported the archiving and documentation of underground nuclear test methods and data for all operational and technical areas involved in underground nuclear testing for which the laboratories have lead responsibility. This includes but is not limited to: device assembly, downhole emplacement, arming, firing and fusing, and radiochemical drillback. - Demonstrated a prototype retrieval/display utility, based on the Mosaic tool, for textual and graphical information. - Reviewed, analyzed, and documented SNL's data from five weapons effects tests: DISCO ELM, DISTANT ZENITH, DIAMOND FORTUNE, HUNTERS TROPHY, and HURON LANDING. - Retrieved, actively reviewed, and stabilized a significant amount of the engineering and underground test data for some nuclear experiments related to the W76. And prepared information for use in a prototype demonstration system for retrieval/display of graphical information. - Data from the hydrodynamic and nuclear test development program for the B83 was reanalyzed with modern calculational tools for use with modern calculational basis. - Knowledge Preservation Project (SNL) was initiated to capture, in retrievable form, undocumented nuclear	DIAMOND ACE, MIDAS MYTH, and MISTY RAIN.	programs. - Continue the Knowledge Preservation Project to capture, in retrievable form, undocumented nuclear weapon component design information.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	weapon component design information, especially perishable information that now exists only in the memories of retiring weapon designers. - Data from past underground nuclear tests were reanalyzed with new multidimensional electron transport code capability and AGT/UGT correlation data from SNL experiments were incorporated into the Defense Nuclear Agency AGT/UGT correlation database. - Continued archiving of documents into the Nuclear Safety Information Center Management Program. To date over 40,000 documents have been archived.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)
	NUCLEAR COMPONENT ASSESSMENT: These activities are directed at acquiring data to evaluate the safety, reliability, and performance of stockpile nuclear weapons and improving our ability to relate the results of experiments and analyses to stockpile nuclear weapon issues. Hydrodynamic experiments were conducted to obtain data for stockpile system primaries including the W76 Trident I warhead, the W80 Cruise Missile warhead, the W88 Trident II warhead, and the W87 Peacekeeper warhead. A hydrodynamic experiment was conducted to evaluate an insensitive high explosive safety upgrade option for the Trident I MK4 reentry body. Furthered the development of and utilized new hydrodynamic diagnostic instrumentation including a multibeam Fabry-Perot velocimeter and gamma-ray camera to obtain improved experimental data return. Developed new materials to improve simulation fidelity and conducted experiments to obtain	NUCLEAR COMPONENT ASSESSMENT: Continue activities directed at acquiring data to evaluate the safety, reliability, and performance of stockpile nuclear weapons and improving our ability to relate the results of experiments and analyses to stockpile nuclear weapon issues. Hydrodynamic experiments are to be conducted to obtain data for stockpile system primaries including several experiments with the W76 Trident I warhead (including an experiment with aged high explosive), the W80 Cruise Missile warhead, the W84 Cruise Missile warhead, and the W87 Peacekeeper warhead. Hydrodynamic experiments are to be conducted to evaluate safety upgrade options for stockpile systems including the B61 Bomb and the W80 Cruise missile warhead. Plans are to further the development of and utilize modern hydrodynamic diagnostic instrumentation including completion of 15 of the planned 20 beam Fabry-Perot velocimeter and use of a gamma-ray camera to obtain	NUCLEAR COMPONENT ASSESSMENT: Continue activities directed at acquiring data to evaluate the safety, reliability, and performance of stockpile nuclear weapons and improving our ability to relate the results of experiments and analyses to stockpile nuclear weapon issues. Hydrodynamic experiments are to be conducted to obtain data for stockpile system primaries including W76, W80, W84 and W89. Hydrodynamic experiments are to be conducted to evaluate safety upgrade options for stockpile systems including B61 and W80. Plans are to further the development of and utilize modern hydrodynamic diagnostic instrumentation including the 20-beam velocimeter and the gamma-ray camera to obtain improved experimental data return. Experiments are to be conducted to obtain additional material property data on special nuclear materials to improve computer analysis. Material density in opacity experiments relevant to secondary performance will

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	additional material property data on special nuclear materials to improve computer analysis. Computer code development and analysis and experimental activities using lasers and pulsed power to address issues such as hydrodynamic instabilities at accelerating material interfaces and equations of state at high temperature and pressure, relevant to nuclear secondaries, were also carried out. High-quality opacity data at mid-z, relying on newly-developed techniques for precise temperature and density measurements, were demonstrated. - Completed design, hydrotest program and evaluation of an insensitive High Explosive warhead intended as a potential safety upgrade for the Mk4 RB. Successful use of a newly-developed gamma-ray camera in a radiography experiment of the Mk4 safety upgrade design program provided enhanced resolution of the boost cavity image. - Demonstrated the newly developed multibeam Fabry-Perot velocimeter in three experiments in the W87 geometry to obtain detailed velocity records of the initial pit motion. - A successful series of experiments were conducted to develop and characterize needed diagnostics to compare mix experiments with the new multi-material 3D version of the advanced hydrodynamics code AMR. - Demonstrated a new dual-cavity interferometer for velocimetry. - Completed development of the	improved experimental data return. Experiments are to be conducted to obtain additional material property data on special nuclear materials to improve computer analysis. New experimental techniques using evolving laboratory x-ray lasers as a diagnostic probe will be developed for diagnosing weapons-like plasmas and density variations in exploding foils relevant to nuclear secondaries. Mix at accelerating interface research will be advanced through new experimental approaches at establishing initial conditions. Ultra-fast measurement technologies will come on line for diagnosing material properties under thermal loading by intense, few-hundred-femtosecond laser pulses. - Continue effort to obtain baseline data for the W76 and W80 using hydrodynamic pin shots, gas cavity radiographic tests, and aged high explosive tests. - Complete 15 beams of the new 20-beam velocimeter. Complete analysis software to decrease the time for analysis of velocimetry data. Develop a dual-frame fast recording system for the Gamma-ray Camera. - Using the diamond anvil cell, map equation-of-state and phase diagram of iron at megabar pressures as benchmark at NSLS. Measure melt temperature in uranium at 3 megabars. Begin measurements of plutonium melt temperature to 3 megabars. Begin mapping equation-of-state and phase of plutonium and uranium between 200 Kb and 3 MB.	be increased by an order of magnitude with modest increases in temperature and atomic number anticipated. Colliding-foil techniques will give equation-of-state data for compressed low and high-z materials at greater than 100 Mbar pressure. The technique will give unique insight into the interplay of physics parameters in this regime. Ultra-short-laser experiments will provide high time-resolution data from high-z material at record power densities.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	Gamma-ray Camera and executed the first Core-Punch radiography experiment on FXR, achieving a doubling of resolution with improved sensitivity. - Demonstrated a newly-developed triggerable rotating-mirror camera capable of interframe times characteristic of electronic cameras, but with higher spatial and temporal resolution. - Using a Diamond Anvil Cell, made first-ever measurement of melt temperature of plutonium at 1.2 Mb, resulting in a dramatic change in theoretical Pu equations of state. - Demonstrated the ability to fabricate tantalum oxide aerogel. A density of 10 mg/cc tantala aerogel was developed. The compatibility of the tantala aerogel with tantalum hydrotest shells was also demonstrated. - Completed GLF, principal LLNL x-ray laser design code for use in modeling Nova weapons physics experiments. - First hypersonic-jet experiments carried out on Nova. Developed general technique to produce flat shocks in hohlraum-mounted Nova targets. Carried out first experiments using highly-perturbated Richtmyer-Meshkov targets. Improved X-ray laser efficiency by coupling two slab targets. - Developed National Ignition Facility weapon physics research plan.	- Using the 2-stage gas gun, measure the final state parameters of shocked and released hot plutonium, and evaluate impact on plutonium equation-of-state. - Use interferometer to obtain density profiles of irradiated foils and further enhance the interferometer by using shorter pulses and high magnification. A 45 ps x-ray laser in a 20 magnification optical system will be used to resolve small spatial scales. - Apply multipulse technique to Nickle-like slabs to achieve lasing at shorter wavelength. Perform imaging experiments on prepulse and multipulse driven Neon-like lasers to measure density profiles and spatial dependence of g_{min} for various laser lines. - Study accessible regimes of dense plasma/weapons plasmas accessible with new x-ray laser techniques. - A set of mixing data will be generated on the Nova laser using a new mounting scheme for the initial material interfaces, in which a membrane is captured between two wire meshes. This will allow for the improvement of comparisons between numerical simulations and mix experimental data. - Continue the effort to prove that the Nova laser and National Ignition Facility can provide diagnosable Local Thermodynamic Equilibrium plasmas suitable for weapons test plasma physics experiments.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
a. Programs and Initiatives	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) NONNUCLEAR COMPONENT ASSESSMENT: - SNL planned and prepared for all Arming and Firing (A&F) procurements to support any type of permitted experiment. Key planning for neutron generator availability and acquisition was conducted. - Established the Program Office for development of an advanced x-ray simulator and the Risk Mitigation Program was initiated. Project planning for key scaling experiments and research module design were begun. - Using SNL unique radiation simulation facilities (Saturn for X-rays, HERMES III for gamma rays, SIR III and Annular Core Research Reactor for neutrons) radiation effects testing was conducted. - The upgraded B61 radar was tested, Trident II A&F components underwent neutron vulnerability testing, neutron radiography was conducted on war reserve components, and radiation degradation and aging experiments were conducted on internal materials of multiple weapon systems. Additionally, radiation testing was conducted on advanced microprocessors, advanced	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) NONNUCLEAR COMPONENT ASSESSMENT: Plan and continue preparation for arming and firing (A&F) procurement as well as maintenance of adequate materials for participation on any type of permitted experiment or underground nuclear test (UGT), should it be required. This places a major emphasis on neutron generator resource allocation, availability and acquisition. - The advanced x-ray simulator project will complete design and initiate construction of both the pulsed power research module and the modification to PBFA-II to enable key scaling experiments to be conducted; both are key to the Risk Mitigation Plan. - Continue radiation transport code improvements and benchmark code performance run-time and storage optimization. Additionally, continue development of three-dimensional Internal Electromagnetic Pulse (IEMP) studies to validate the new 3-D, deterministic radiation transport code. Supporting the code developments will be the continued development and validation of testing protocols for both electronics and materials. Also, the development of an electrical simulation technique for IEMP circuit response to broaden the testing	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued) NONNUCLEAR COMPONENT ASSESSMENT: Plan and continue preparation for arming and firing (A&F) procurement as well as maintenance of adequate materials for participation on any type of permitted experiment or underground test, should it be required. This places a major emphasis on neutron generator resource allocation, availability, and acquisition. Continue radiation testing and evaluation of replacement stockpile parts, advanced development components, and new technologies. Additionally, SNL will continue to maintain and upgrade its unique radiation testing facilities: Saturn, HERMES III, and SPR III. - Complete radiation transport code improvements and benchmark of code performance run-time and storage optimization. Additionally, complete development of three-dimensional Internal Electromagnetic Pulse (IEMP) studies and begin to validate the new 3-D, deterministic radiation transport code. Supporting the code developments will be the continued development and validation of testing protocols for both electronics and materials. Also the development of an electrical simulation technique for IEMP circuit response to broaden the testing resources available for combined

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	photonics for weapon fuzing applications, the Direct Optical Initiation (DOI) hardware, advanced detectors for satellite surveillance systems, advanced encryption translator and other associated electronic hardware, techniques for testing and evaluation dose-rate dependent electronics, and discrete piece parts for new technologies. - The next generation data acquisition and instrumentation system was designed for Saturn and HERMES III. Code improvements for the multi-dimensional electron transport for IEMP analysis of complicated electronics were completed.	resources available for combined Transient Radiation Effects on Electronics (TREE)/IEMP testing will be initiated. - Continue radiation testing and evaluation of replacement stockpile parts, advanced development components, and new technologies. This will include neutron vulnerability testing of a primary from a stockpile weapon. Additionally, SNL will continue to maintain and upgrade its unique radiation testing facilities: Saturn, HERMES III, and SPR III. The modernized SPR IIIM reactor will be completed and available for use and a new Gamma Irradiation Facility design will be initiated. - The Annular Core Research Reactor (ACRR) core will be mothballed for DP use as required while the ACRR is diverted entirely to medical isotope production.	Transient Radiation Effects on Electronics (TREE)/IEMP testing will be completed. - Modification of the Particle Beam Fusion Accelerator (PBFA-II) and the advanced pulsed power research module will be completed. Initial testing begins in FY 1996, and will be completed in calender year 1997. This will enable Sandia National Laboratories to validate the scaling laws, conduct key source development research, develop and establish the engineering necessary to store and transport required energy levels along a magnetically insulated transmission line.
	ENHANCED SURETY: FY 1994 efforts continued to concentrate on reducing the inherent risk associated with nuclear weapons. FY 1994 efforts included: - Conducted preliminary studies of candidate materials for enhancing fire resistant pit performance by using materials that will combine with plutonium to form high melting temperature compounds. - Continued negotiations with Russia for U.S. sponsored HE safety experiments. - Design and fabrication of hardware	ENHANCED SURETY: FY 1995 efforts will continue to concentrate on reducing the inherent risk associated with nuclear weapons. FY 1995 efforts will include: - Start a new program for a pit use control scheme that can be retrofitted into the existing stockpile without nuclear testing. - Continue investigation into fire resistance enhancement by introducing materials that will react favorably with molten plutonium. - Continue attempts to include Russian weapon scientists in accident safety efforts.	ENHANCED SURETY: FY 1996 efforts will continue to concentrate on reducing the inherent risk associated with nuclear weapons. FY 1996 efforts will include: - Continue efforts to improve capability to predict warhead response in accident scenarios. - Continue efforts to improve capability to address stockpile reliability and performance issues. - Continue development of methods to contain molten fissile materials in a pit in a fire environment and to activate a facility to test pits and verify design requirements.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	for Fire Resistant Tube (FRT) development. - Developed and fabricated a small lot of optical detonators and related hardware required to fire a hydrodynamic test using ASKCD laser. - Designed and successfully demonstrated a low energy slapper detonator and integrated fireset. - Linked the operational features of the thermal-chemical code TOPAZCHM and mechanical code NIKE2D into an operational code, a major step in the development of the 2D thermo-chemical-mechanical code LYNX2D. - Determined the shock sensitivity of TATB based explosives at elevated temperatures up to 250 degrees Celsius. Experimentally determined the initiation mechanism and overall response of TATB based explosives to abnormal impact stimuli. - Provided empirical measurements of the ignition threshold and combustion mechanism of HMX and TATB based explosives for code calibration. - Developed a new energetic monomer to be used in explosives and propellants, and created alternate synthesis routes to TATB which rely on domestic supplies of chemicals and can utilize other demilitarized chemicals as feed stock. - Developed a non-equilibrium carbon equation of state which can simulate carbon cluster formation in high explosive products.	- Continue interactions with the Russian Federal Nuclear Center Laboratories including completion of contractual negotiations for collaborative work in the energetic materials technology area. - Continue development of the fully coupled thermal-chemical-mechanical-hydrodynamic integrated code for predicting response of systems. Including completion of LYNX2D code development, generalizing reactive-flow model allowing any combination of Equation-of-State forms, development of models for strength of materials and work processes in explosives, and incorporation of reactive-flow into an adaptive griding algorithm. - Characterize ignition, deflagration, and detonation transition mechanisms for HMX and TATB-based explosives. This will include determining the combustion rate and ignition mechanism as a function of pressure and temperature and characterizing the change in deflagration rate and combustion mechanism in damaged explosives. - Characterize the response of TATB and HMX based explosives subjected to mechanical stimuli related to accidents. This will include determination of the violence of confined insensitive high explosive and conventional high explosive response to low-amplitude impact, crushing, and combination shocks; coupling with code development to validate unusual impact scenarios; and characterization of the material strength and strain to failure	- Continue development of specialized disablement techniques using thermite technology. - Conduct directed safety studies and safety assessments. Continue to support efforts to develop advanced surety technologies to better characterize weapons in abnormal environments. - Continue effort to develop weapon capability of enhanced safety optical firing technology through prototype hardware development and applied research supporting the baseline architecture. An optical firing system consists of an optical firing set along with optical connectors, fiber cables, optical barrier feedthroughs, and optical detonator. - Continue support of Acorn project to improve performance and increase safety with an advanced gas transfer system.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	- Developed a fiber-optic coupled method for remote diagnostics of equation-of-state experiments of hot and expanded actinides. Measured the shock temperatures of liquid deuterium leading to a new model for density dependent molecular dissociation. - Carried out special deliberate unauthorized use (DUU) threat assessments. - Completed assessment of several concepts for nuclear weapon firing systems which would significantly enhance weapon surety. Developed stronglink concepts that are significantly smaller and simpler than existing devices. - A series of paste extrudable explosive rheology and compatibility studies was completed. - The Barrier Design/Analysis Guide was published. Relevant for commercial and weapon applications, it summarizes the results of an extensive program of structural analysis and test, both static and dynamic, and provides guidance for the robust design of structures. - Completed design, development, test and documentation of a volatile memory device with attributes insensitive to manufacturing processes. - Fabricated and demonstrated an electrically powered microengine that could be used to drive other micromechanisms. - A lightning arrestor connector with	of explosives under dynamic loading. - Characterize the material properties, both performance and sensitivity, of the aging explosives in the current stockpile. - In a joint effort between LANL and SNL, the most promising option(s) for enhancing firing system safety will be identified and detonator stronglink prototypes will be fabricated and tested. - Plan to design, build, and demonstrate a Weapon Interface Collar (WIC) that will provide proximity sensing, read weapon identifiers, and allow no-lone zone to be enforced without personnel. - Additional Super Lightning Arrestor Connector (SLAC) Project will continue with emphasis on the use of alternative, less expensive materials. - Next generation Direct Optical Ignition Firing Set will be designed and fabricated. - Will conclude a security assessment of facilities and operations at Pantex and complete development, production and delivery of a Current Limiting Adapter to ensure nuclear safety during implant use control code operations. - Continue coordination with National Security Agency to develop an application specific integrated circuit (ASIC) to process the cryptographic algorithm internal to the controller for the Theater Secure Recode System (TSRS).	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	Improved ruggedness and aging characteristics, in comparison with conventional technologies, was designed and demonstrated. - A rugged optical path assembly, including laser, splitter/coupler, and stronglinks, was fabricated for the Direct Optical Initiation (DOI) Firing Set. - Provide support for NATO Senior Level Weapons Protection Group, DOE Command and Control Steering Group, and Department of Defense Command and Control Steering. - Investigated and repaired several pieces of older use control equipment, including cables, testers, and code processesors, used by DoD units and made improvements, including software and hardware enhancements. - Developed and tested prototypes for a Multiple Code Coded Switch Encryption Translator (MET) to enable encrypted code operations for use control of nuclear warheads.	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)	STOCKPILE MAINTENANCE, EVALUATION & TECHNOLOGY (continued)
	FUTURE TECHNOLOGY: - Defined staged feasibility study for two new fabrication processes for U6Nb alloy components. - For uranium deposition development, fabricated flat plate and cylindrical Physical Vapor Deposition (PVD) samples that have good alloy composition and microstructure and initiated Plasma Spray process study at Y-12 plant. - Detailed design of a gas transfer	FUTURE TECHNOLOGY: - The Mod 2 design for a neutron generator will be assembled and tested and tube optics will be redefined for the Mod 3. - Complete the Plasma Spray process study including assessment of densification, physics, performance of the product, and the alloy powder manufacturing process. - Continue development of the Physical	FUTURE TECHNOLOGY: FY 1996 Efforts will include: - The support of a wide range of advanced material and process development. Primary emphasis is on ceramics and metals, but efforts include other materials and processing problems. Development of porous ceramic membranes for advanced boost systems; evaluate promising plutonium surrogates; demonstrate cross-linked polystyrene foam for special applications.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	system for the W76 was completed; WR hardware for twelve systems was fabricated; and a conceptual design of a more advanced version of this system was completed.	Vapor Deposition process for uranium with the goal of fabricating cylindrical samples for hydrotests and a full size machining bank. - Conduct experiments with the high-current electron beam pulses of the Flash X-Ray facility at LLNL to establish the permanent disablement thresholds for render-safe effects.	- Continue basic research and development to support boost systems with improved safety and performance for possible application in the enduring stockpile. - Support for advanced nondestructive testing and evaluation techniques for weapons programs. These include state-of-the-art x-ray computed tomographic, and ultrasonic capabilities. Applications explore stress measurements inside metals using x-rays and advanced visualization techniques to display defects. - Continue to work on Highly Integrated Detonator System (HIDS). - Complete the processing and testing of the Ultra fine TATB booster. Demonstrate detonation spreading and implement base line computational modeling. - Demonstrate feasibility of providing full scale, nearnet shape part blanks.
	Subtotal, Stockpile Maintenance, Evaluation & Technology $ 267,496	Subtotal, Stockpile Maintenance, Evaluation & Technology $ 248,044	Subtotal, Stockpile Maintenance, Evaluation & Technology $ 232,734

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
a. Programs and Initiatives	RECONFIGURATION This category provided research and development support for the weapons complex nuclear reconfiguration effort that was terminated in FY 1995. Activities in FY 1994 included: - Developed novel algorithms that can be used to optimize assembly sequences in component assemblies using standard CAD files as input and have demonstrated that these methods can be used to determine optimum assembly sequences in complex (~50 parts) assemblies in approximately 20 seconds compared to minutes with previous methods.	RECONFIGURATION No activity in this category in FY 1995.	RECONFIGURATION No activity in this category in FY 1996.
	Subtotal, Reconfiguration $ 5,874	Subtotal, Reconfiguration $ 0	Subtotal, Reconfiguration $ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
a. Programs and Initiatives	SPECIAL PROJECTS & PARTNERSHIPS	SPECIAL PROJECTS & PARTNERSHIPS	SPECIAL PROJECTS & PARTNERSHIPS
	WEAPONS TRANSPORTATION SAFEGUARDS SYSTEMS:	WEAPONS TRANSPORTATION SAFEGUARDS SYSTEMS:	WEAPONS TRANSPORTATION SAFEGUARDS SYSTEMS:
	- The first new Armored Tractor (AT), built by Marmon Motor Company, was delivered.	- Efforts to enhance geographic based vehicle tracking system will evaluate extendibility and improve query response time using the spatial index, and demonstrate realtime graphical user interface.	- FY 1996 efforts will continue to emphasis the development of the SafeGuards Transporter to replace the 20 year old Safe Secure Transport for ground transportation of weapons and special nuclear materials.
	- Major subsystems for the new SafeGuards Transporter (SGT) including mechanical, electrical, access delay, an access controller and communications were demonstrated in the lab.	- Prototype fabrication, final design review and Production/Operational Readiness Review will be completed for the SafeGuards Transporter (SGT). Delivery of first production SGT is scheduled.	
	- Continued efforts to enhance real-time, object oriented geographic based vehicle tracking software and hardware capabilities.	- Effort will continue in transportation risk assessment. Efforts will include statistical descriptions of heavy truck accident severities and analysis of the plutonium dispersal for accidents involving SGT designs.	
	- A CFC free sticky foam specification and a sticky foam reformulation report were completed.		
	- Continued efforts in transportation risk assessment technology.		
	- A new microprocessor based access control, which was prototyped and demonstrated in June of 1994 was transitioned to fullscale engineering development for subsequent fleet wide implementation.		

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	SPECIAL PROJECTS & PARTNERSHIPS (continued) EXTRAORDINARY ES&H GENERAL SITE REMEDIATION: - A Propellants, Explosives, and Pyrotechnics Evaluation and Reapplications (PEPER) project was initiated to place SNL in compliance with DOE Explosive Safety Manual. - Effort continued to eliminate onsite tritium research and development at Sandia Livermore Site. A formal Transition Plan was developed and accountable tritium was reduced to four grams. DOD MOU: This program supported Joint DoD/DOE Munitions Technology Development Program research. Activities in FY 1994 included: - Completed a major study defining the response of explosives by shaped charge jets. - Produced a self-consistent database for tantalum. First major step toward putting warhead materials database on a common national ground. - Implemented a new management model for interagency joint development of computer codes, recognizing the enhanced requirements for agency interdependence in severely constrained budgets. - Built and demonstrated a proof-of-principle, small-scale system for destruction of energetic materials	SPECIAL PROJECTS & PARTNERSHIPS (continued) EXTRAORDINARY ES&H GENERAL SITE REMEDIATION - Propellants, Explosives, and Pyrotechnics Evaluation and Reapplications (PEPER) project will be completed in FY 1995. - Effort to eliminate onsite tritium research and development at Sandia Livermore Site will continue with accountable tritium eliminated. - Asbestos abatement and decontamination and demolition projects will continue through FY 1995. DOD MOU: This program supports Joint DoD/DOE Munitions Technology Development Program research. Activities scheduled for FY 1995 include: - Measure mechanical properties for a range of explosives to support development of models of damaged explosives behavior. - Expand the national warhead materials database to include refractors W and Mo. - Implement the Adaptive Mesh Refinement techniques into working computer codes for examining large and complex systems. - Develop new test capability for high strain rate testing under tensile loads to use in conjunction with a high energy electron beam for rapid heating	SPECIAL PROJECTS & PARTNERSHIPS (continued) EXTRAORDINARY ES&H GENERAL SITE REMEDIATION: - Complete the Propellants, Explosives, and Pyrotechnics Evaluation and Reapplications (PEPER) project to place SNL in compliance with DOE Explosive Safety Manual. - Complete the clean up of the non-accountable tritium in the Tritium Research Laboratory at SNL-Livermore. DOD MOU: This program supports Joint DoD/DOE Munitions Technology Development Program research. Activities scheduled for FY 1996 include: - Continue implementation of improved deflagration to detonation transition model into CTH hydrothermal code. Complete coupling XCHEM to mechanics code SANTOS and validate experiments. Design and develop the executive code to allow use of existing software models on massively parallel computing machines. - Continue development of next generation thermochemical code CHEETAH, successor to benchmark thermochemical code TIGER. - Perform slow heat, long duration thermal decomposition studies on energetic materials of interest to

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	using molten salts. - Developed slapper detonators fabricated using thin film electronic network technology. These slappers are deposited on an alumina substrate, making them cheaper and more easily integrated than previous state-of-the-art slappers. - Produced and distributed the next-generation computer code, CHEETAH, for predicting the performance of high explosive and propellant formulations. - Developed a physically based material model for Ta-W alloys which includes effect of hydrostatic pressure on aspects of constitutive response. - Developed a complete engineered biological treatment system to remove and destroy energetic materials that are sorbed on activated carbon. Pilot plant was installed at Pantex. - Developed computational methods to incorporate deflagration-to-detonation transitions into the CTH workhorse hydrothermal code. - Characterized the high temperature thermal decomposition chemical kinetics of several DoD/DOE explosives. - Several technologies that can be used to demilitarize explosives and pyrotechnics were demonstrated and an integrated demilitarization system that will enable the disposal of military fuses at a profit has been developed.	of test sample. - Begin new project to improve penetration in concrete for existing weapons systems, allied with improvements in concrete modeling. - Operate pilot plant for biological treatment of activated carbon for removal of energetic materials at Pantex. - Will explore and exploit the capability of Aysncronous Transfer Mode (ATM) networking technology to prove distance insensitive and scalable networks in both local and wide area networks. - New cryptographic protocols will be developed for secure remote access to sensitive computing and information resources.	DoD/DOE. - Initiate development of shock-activated, thermal battery for ESAD application. - Complete and evaluate guidance and control algorithms using the Multiple Launce Rocket System (MLRS) flight simulation computer to further development of a low-cost Global Positioning System (GPS) based guidance and control system for existing/advanced conventional contacts. - Resolve critical issues in penetrating munition electromagnetic sensor (mechanical shock, high temperature effects, piezoelectric effects, various physical considerations). - Conduct demilitarization treatment demonstrations on similar DoD/DOE components, and unique DoD components, evaluate cost effectiveness and efficiency of treatment systems. - Complete energetic material cryocycling models, document and transfer models to DoD users. - Complete supercritical water oxidation technology experiments demonstrating ability to destroy toxic composition generated from demilitarization of munitions. - Investigate practicality of droplet-based manufacturing (new method) for production of high-quality shaped-charge liners at reasonable production rates.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	SPECIAL PROJECTS & PARTNERSHIPS (continued)	SPECIAL PROJECTS & PARTNERSHIPS (continued)	- Continue validation of numerical simulations using very high speed photography (IC camera) to determine origin of copper jet surface structure an relation to jet stability and breakup. - Build and establish steady-state parameters for large scale molten salt destruction plant for processing demilitarization high explosive waste. - Continue modeling of polycrystalline explosive. - Conduct shock initiation experiments of RDX crystals. - Study nonconventionally processed high density materials to improve producibility and performance of refractory-based warheads. - Examine and test base hydrolysis as a removal technology in demilitarization. - Continue research into use of advanced composites.
	HIGH PERFORMANCE COMPUTING & COMMUNICATIONS: - Participated in the Department's effort to enhance high performance computing and communication and the National Information Infrastructure. FY 1994 efforts developed digital links between Los Alamos, Lawrence Livermore, and Sandia National Laboratories and used those links to implement virtual teaming, resource sharing, data access and outreach to industry and to the	HIGH PERFORMANCE COMPUTING & COMMUNICATIONS: - FY 1995 efforts will continue on funding provided in FY 1994. Activities will include the completion of virtual teaming and resource sharing applications, continued research on information security, and outreach to industry, education institutions, and the public.	HIGH PERFORMANCE COMPUTING & COMMUNICATIONS: No effort in FY 1996 for this program.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	public.		
	FEDERAL SUPPORT AND OTHER ACTIVITIES:	FEDERAL SUPPORT AND OTHER ACTIVITIES:	FEDERAL SUPPORT AND OTHER ACTIVITIES:
	- Supported the Los Alamos Area Office, Kirtland Area Office, the (County of) Los Alamos Firefighters, and Headquarters activities.	- Supported the Los Alamos Area Office, Kirtland Area Office, the (County of) Los Alamos Firefighters, and Headquarters activities. - Proceed with a remedial environmental impact statement for the Dual-Axis Radiographic Hydrotest Facility (DARHT) at Los Alamos National Laboratory. The record of decision (ROD) is expected early in FY 1996, prior to any decision to proceed with experimental activities at the facility.	- Support the Los Alamos Area Office, Kirtland Area Office, the (County of) Los Alamos Firefighters, and Headquarters activities.
	ACCELERATED STRATEGIC COMPUTING INITIATIVE: No activity in FY 1994.	ACCELERATED STRATEGIC COMPUTING INITIATIVE: No activity in FY 1995.	ACCELERATED STRATEGIC COMPUTING INITIATIVE: First year funding of $45 million is requested in FY 1996 for the Accelerated Strategic Computing Initiative (ASCI). ASCI will focus on developing the computer simulation capabilities to establish the safety, reliability, and performance of weapons in the stockpile, virtual prototyping for maintaining the current and future stockpile, and connecting output from complex experiments to system behavior. Accelerating our computer modeling, application code development, and computer facility efforts will help to maintain a high degree of confidence in the safety, security, and reliability of the enduring nuclear weapons stockpile. ASCI will produce the cutting edge computer modeling and simulations capabilities required to shift from nuclear test-based methods to

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)			computer-based methods to test the performance of weapons systems. Ensuring the performance, safety, and reliability of the stockpile will require thousand-fold increases in computing and simulation capability. Moreover, similar advances are required in high-end software tools, programming environments, storage, networking, and visualization software.
	Subtotal, Special Projects & Partnerships $ 79,676	Subtotal, Special Projects & Partnerships $ 70,000	Subtotal, Special Projects & Partnerships $ 114,417

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
a. Programs and Initiatives	THREAT ASSESSMENT & TREATY IMPLEMENTATION COSTS Continued to conduct research and development in support of non-proliferation, arms control, and threat assessment/technology surprise programs. FY 1994 activities included: - Successfully designed, calculated and tested a new version of the Special Shaped Charge for more effective disablement. - Began investigation of the use of thermite and liquid injection as a disablement tool. - Supported proof of principle calculations to determine the isotopic signatures from detonation debris of nuclear devices. This forensic capability builds on the U.S. nuclear weapons test experience. - Conducted R&D in support of special Emergency Operations Division (EOD) units. - Demonstrated calculationally the effectiveness of Silver Bullet for a wide range of counterproliferation applications. Initiated design and construction upgrade of an experimental facility at NTS for full scale Silver Bullet hydroexperiments.	THREAT ASSESSMENT & TREATY IMPLEMENTATION COSTS Continue to conduct research and development in support of non-proliferation, arms control, and threat assessment/technology surprise programs. FY 1995 activities will include: - Continue efforts to develop verification computer models. Review existing weapons test data including one point experiments and computational models of one point tests and calculate verification of the measurements. Model generic low technology nuclear explosives and verify codes. - Investigate designs of shaped charges which optimize mass and speed in ways not done by any current technology shaped charges. - Design analysis of proliferant/terrorist devices using metal oxides and enriched uranium systems. - Analyze proliferation production paths to identify vulnerabilities. - Conduct initial tests for full-scale Render Safe application experiments and for characterization of full-scale Silver Bullet technology.	THREAT ASSESSMENT & TREATY IMPLEMENTATION COSTS Continue to conduct research and development in support of non-proliferation, arms control, and threat assessment/technology surprise programs. FY 1996 activities will include: - Continue development of proliferation response technologies to include assessments of possible proliferator/terrorist weapon designs, studies of weapon disablement techniques, and development of weapon research and diagnostic technologies. - Continue to support foreign technical exchanges to include cost/benefit analyses of proposed collaborations and assessment of available related information. - Demonstrate Silver Bullet at full scale against full scale targets. - Explore disablement effectiveness of a high-energy electron beam and study the feasibility of a compact accelerator and other speed-of-light disablement techniques. - Develop potential responses to anticipated proliferant threats, such as implications of nuclear weapons in Korea.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Programs and Initiatives (Cont'd)	- Performed a detailed study which determined that geometric fractionation in explosion debris can provide structural information about the device. - Conducted a first-order assessment of current capabilities to detect radiation sources in a typical modern office building. Developed several plausible search strategies. - Initiated a Surety Technology Exchange with the Russian weapon design institutes. The first three surety conferences associated with this exchange were organized. Contracts were placed for surety research and development in Russia. - Developed a DOE-MINATOM agreement for the Exchange of Warhead Information in the Field of Safety, Security and Physical Protection.	- Continue performing technical proliferation assessments addressing key issues that affect the security, storage, and disposition of weapons and nuclear materials. - Continue the Surety Technology Program including the security sensor workshop and surety research and development that is mutually beneficial. - Conduct the initial Technical Working Group meetings of the Warhead Information Exchange. Lab-to-Lab exchange with the weapon design labs of the People's Republic of China will be initiated for collaborative activities in surety and nonproliferation.	- Investigate materials that may be substituted for various weapons components and energetic responses. - Continue investigation of various materials' radiation characteristics.
	Subtotal, Threat Assessment & Treaty Implementation Costs $ 15,701	Subtotal, Threat Assessment & Treaty Implementation Costs $ 13,057	Subtotal, Threat Assessment & Treaty Implementation Costs $ 18,877
	TOTAL PROGRAMS & INITIATIVES: $ 368,747	TOTAL PROGRAMS & INITIATIVES: $ 331,101	TOTAL PROGRAMS & INITIATIVES: $ 366,028

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
b. Core Research and Advanced Technology	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY
	CONCEPTUAL DESIGN AND ASSESSMENT: Activities in Conceptual Design and Assessment fall into two general areas: (1) re-analysis of past data with modern calculational tools, and (2) design and execution of above-ground and underground experiments for the purpose of advancing the understanding of relevant weapons issues such as performance, reliability, and safety and surety. - Initiated a project entitled Final Analysis and Documentation of the Enduring Stockpile (FADES). The intent of this project is to (1) develop modern physics models for weapons in the enduring stockpile, (2) obtain and incorporate relevant experimental data in those models, (3) analyze each weapon for performance, safety, reliability, potential degradation due to aging, and suitability for recertification should replacement of some component be required, and (4) prepare final documentation of the results of the above analyses. - Designed, conducted and analyzed several (aboveground) ejecta experiments relevant to primary performance and reliability. - Supported the analysis and design of	CONCEPTUAL DESIGN AND ASSESSMENT: Activities in Conceptual Design and Assessment fall into two general areas: (1) re-analysis of past data with modern calculational tools, and (2) design and execution of above-ground and underground experiments for the purpose of advancing the understanding of relevant weapons issues such as performance, reliability, and safety and surety. - Continue effort on the Final Analysis and Documentation of the Enduring Stockpile (FADES) project; in particular incorporate above-ground experimental data from the W76 development history. - Continue the campaign of ejecta experiments investigating primary performance and reliability. - Complete preliminary designs for pulsed power and laser experiments the goal of which is to determine whether correlations exist between the physics regimes available in aboveground experiments and those regimes accessed by underground nuclear tests. - Complete preliminary design for, conduct and analyze several experiments at the Trident Laser Facility to	CONCEPTUAL DESIGN AND ASSESSMENT: Capabilities in Conceptual Design and Assessment are exercised through the exploration of concepts and technologies that offer potential options for meeting future needs. Through these efforts, future weapons and components are conceived. Although these activities do not involve formal hardware development, they may include a limited amount of prototyping or experimentation to assess or demonstrate conceptual feasibility. These efforts are often computationally intensive. Emphasis is placed upon the anticipation of future national security requirements and missions. Current areas of interest include, but are not limited to, advanced electromagnetic radiation, stealth, and enhanced safety features such as fire resistant pits (FRP), insensitive High Explosives (IHE), insertable nuclear components, paste explosives, and advanced containment. These capabilities are critical to sustaining the longterm operational safety and the credibility of the nuclear deterrent.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	Nova laser experiments addressing the weapons physics issues of radiation flow and turbulent hydrodynamics. - Began an analysis of data from the Ion Beam Facility to investigate possible correlations between this data and data from underground nuclear tests. - Continued development of models to analyze the Trident laser plasma interpenetration experiments. - Finished development of 2D adaptive mesh refined code for instability and turbulence modeling. Began development of a 3D code, a preliminary version is being tested against the 2D code. - Re-analyzed hydrodynamic and nuclear test data, with particular emphasis on the W76 and W87, with modern two- and three- dimensional codes. - Began re-analysis of radiographic data from hydrodynamic experiments in order to establish correlations between aboveground data and data from underground nuclear tests. - Began design of several pulsed power experiments to determine correlations between data accessible at the aboveground Pegasus pulsed power facility and data from underground nuclear tests. - Designed several hydrodynamic and hydronuclear experiments to investigate one-point safety, reliability, and performance issues for current and past stockpiled primaries.	determine if potential aboveground/underground correlations exist between some physics parameters taken at Trident and the Nevada Test Site. - Complete the re-analysis begun in FY 1994 of radiographic data to determine the correlation of aboveground data with underground nuclear test data. - Re-analyze the data from the B83 hydrodynamic and nuclear test development program with modern calculational tools. - Complete preliminary design for the National Ignition Facility (NIF) target capsule. - Re-analyze the entire nuclear testing history of the W-76 and develop a self consistent numerical model for this warhead. - Begin analysis of the B-61 nuclear testing history. - Perform a radiographic core-punch experiment in order to study the late time convergence behavior of the W87 primary.	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued)

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	- Investigated the performance of several candidate Inertial Fusion capsule designs for the proposed National Ignition Facility. PHYSICS: Without underground nuclear testing, a robust physics program is essential for science-based stockpile stewardship. The Physics Program supports basic weapons physics experiments, development of improved diagnostics for use on aboveground experimental facilities, and upgrades to existing experimental facilities. Laboratory experiments are conducted to develop and utilize the aboveground facilities to simulate conditions encountered in an underground test. - Conducted one point hydrodynamic tests on a conventional high explosive primary and on an insensitive high explosive primary to give data to benchmark 3D hydrodynamic safety codes. - Conducted a pin shot and a gas cavity radiographic test on a simplified implosion system designed to increase understanding of generation of mix in a primary. - Investigated generation of gigabar shocks using ultra-high intensity lasers and investigation of shock propagation in high energy density matter. Imaged shock breakout with 300 femtosecond and 1 micron resolution. - Developed (jointly with scientists of the Former Soviet Union) high resolution curved crystal spectrometer. - Liner Ejecta experiment on Pegasus	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued) PHYSICS: Without underground nuclear testing, a robust physics program is essential for science-based stockpile stewardship. The Physics Program supports basic weapons physics experiments, development of improved diagnostics for use on aboveground experimental facilities, and upgrades to existing experimental facilities. Laboratory experiments are conducted to develop and utilize the aboveground facilities to simulate conditions encountered in an underground test. - Continue the study of mix in primaries with two hydrodynamic tests to aid characterization of mix in an imploding system. - Opacity experiments will produce detailed quantitative data on relevant materials using the NOVA laser and the new Los Alamos time-gated x-ray spectrometer. - Laser driven hydrodynamic experiments on the University of Rochester OMEGA laser will explore effects of fabrication defects in dynamic systems. - Conduct radiation flow experiments using the record yields of soft x-rays from Procyon source. - Test advanced radiation source-target approaches for direct drive x-ray production on both Pegasus and Procyon.	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued) PHYSICS: Without underground nuclear testing, a robust physics program is essential for science-based stockpile stewardship. The Physics Program supports basic weapons physics experiments, development of improved diagnostics for use on aboveground experimental facilities, and upgrades to existing experimental facilities. Laboratory experiments are conducted to develop and utilize the aboveground facilities to simulate conditions encountered in an underground test. Physics issues involving hydrodynamics, radiation physics, plasma physics, nuclear physics, solid state physics, optical physics, and chemical physics are addressed in the experiments. This provides for important physics understanding, code validation, and sustains the skills of our theoretical and experimental scientists. Modeling studies complement the physics effort by using important Inertial Fusion facilities to conduct weapons-related physics experiments. This provides for a parallel benefit to the weapons program while still pursuing other long term goals of the ICF program. Starting in FY 1996, Defense Programs will increase its participation in research at the Los Alamos Neutron Scattering Center (LANSCE). FY 1996 funding is estimated at $25 million. Stockpile Stewardship will benefit from the use of LANSCE in stockpile surveillance and in materials research.

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	verified target design, developed laser holography and provided initial quantitative measurement of particulate ejecta from a cylindrical, shocked free surface in a vacuum at shock pressure relevant for weapons applications. - Thin foil implosion experiments on Pegasus measured instability development for light and heavy liners in excellent agreement with 2D MHD predictions. - Identified and explored a promising instability dominated plasma opening switch on Procyon at currents about 60% of those proposed for Atlas facility. - Leveraged pulse power technology development resources by exploring Russian pulse power and plasma capability at VNIIEF. Magnetized plasma physics experiment conducted at Arzamas 16. Conducted follow on experiment at Los Alamos. - Continued experiments to measure the opacity of Niobium at the Nova laser. - The major components for an Advanced Hydrotest Facility accelerator (an FET-switched power modulator cell and a kicker structure and associated fast pulser) were constructed and successfully tested. An interLaboratory Physics Requirements Committee was established to provide the requirements for an Advanced Hydrotest Facility. - Studied possible energy release mechanisms for nuclear isomers. Developed theoretical models to predict the properties of nuclear isomers that may serve as energy storage mechanisms.	- Develop models and field diagnostic systems on advanced radiation source experiments on pulsed power machines at SNL in preparation for developing design for Atlas targets. - Continue to leverage technology resources using Russian technology at Arzamas 16. Joint activities will include experiments in the magnetized plasma experimental series, experiments in the x-ray source development series, and design study for very large explosive pulse power systems using Russian technology. - Continue new generation of opacity calculations up through Z-30. - Complete a new evaluation of the cross sections for all uranium isotopes to make them as self consistent as possible. - Using the upgraded CHEQ code, a comprehensive review of carbon phases and kinetics as presently understood will be completed and published. Carbon time-dependent rate values will be developed for use in hydrocodes. - Testing of the technology necessary for an Advanced Hydrotest Facility will include the development of a full inductive adder power modulator, and the development of an electromagnetic code for simulating electron beam propagation in non-linear lines. - Continue to develop theoretical models to predict the properties of nuclear isomers that may serve as energy storage mechanisms. Conduct	LANSCE surveillance activities in FY 1996 will include the testing of the concept of fast neutron radiography of weapon systems to detect small scale (1mm) defects that could serve as an indicator of major component deterioration or damage. Weapons materials experiments will include efforts to measure the temperature in a shocked explosive using a unique temperature probe that is based on neutron resonance absorption in the high explosive; efforts to make spatially-resolved measurements of strain in materials of importance in weapons manufacture such as beryllium, stainless steel, and titanium alloys; and efforts to determine the bulk texture of materials, such as tantalum alloys, which can have a major influence on materials performance. FY 1996 activities will include: - Design, conduct and evaluate hydrodynamic tests to study physics issues affecting the functioning of primaries. This effort continues the quest for total predictability in primary physics. - Continue collaboration among the three Defense Programs laboratories on pulse power issues fundamental to the design and operation of aboveground experiments for Defense Programs missions. - Perform high-energy density weapon physics experiments on Pegasus, Procyon, NOVA, and Trident. - Continue the transfer of and consultation on the SNL Proto II X-ray

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	Conducted experiments that verify the prediction of these models in regions of the periodic table where nuclear shape isomers are expected. - Developed advanced concepts for large area gamma ray imaging detectors which can be used for locating special nuclear material (SNM) at a stand-off distance. - Discovered and analyzed a slow power-law decay memory effect in certain types of rotating turbulent flows and have shown that this effect is governed by Levy probability laws. The memory function can be used for statistical forecasting and for stochastic modeling of the turbulence. - Developed a model for production of 10-30 MeV gamma rays in nuclear reactions relevant to nuclear test and inertial Fusion diagnostics, and have completed the analysis of an experiment that verifies this model. - Enhanced the capabilities of a unique x-ray spectrometer calibration facility, which is currently utilized to test and calibrate reflection grating arrays for flight on the X-ray Multimirror Mission, to facilitate the calibration of x-ray spectrometers for various non-nuclear weapons physics experiments. - Tested and operated a new particle trap designed to confine a non-neutral plasma of cold positrons to enable experimental studies of pure positron plasmas and open the possibility of creating a source of polarized low energy positrons for characterizing	experiments that verify the predictions of these models in regions of the periodic table where nuclear shape isomers are expected. - Continue high-pressure synthesis of an energetic polymeric form of nitrogen, with specific energy per volume at one atmosphere predicted to be three times that of HMX. New Raman data for nitrogen-rich sodium azide (NaN3) suggests that the inhibiting barriers may be more easily exceeded for this energetic precursor. - Continue development on advanced concepts for large area gamma ray imaging detectors which can be used for locating SNMs at a stand-off distance. - Utilize a new particle trap designed to confine a non-neutral plasma of cold positrons. Perform experimental studies of pure positron plasmas and open the possibility of creating a source of polarized low energy positrons for characterizing electronic properties of materials. - Perform experiments at LLNL's Linac facility to study electron-beam energy deposition in materials. Validate data files for photo neutron production on several materials relevant to these experiments. - The Proto II X-Ray Simulation Facility at SNL will be transferred to AWE (UK) and then shipped to Aldermasten to enable the UK to pursue Pulsed Power weapons physics applications. Much of the planned work will be joint efforts with the U.S.	Simulation Facility to AWE (UK) to enable the UK to pursue pulse power weapons physics.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	electronic properties of materials. - Completed preparation for experiments on the LLNL Linac facility to study electron-beam energy deposition in materials. Developed data files for photo neutron production on several materials relevant to these experiments. - Developed an ultrahigh vacuum version of an interfacial force microscope for studies of interfacial adhesion, used scanning tunnelling microscopy to investigate nucleation processing organometallic CVD, measured the gas phase profile of the Ga atom and AsH2 radical in GaAs deposition, and extended first principles theoretical codes to simulate technologically relevant transition metal surfaces. - A class of candidate surface treatments, to increase polymer adhesion and the stability of optical fibers, was identified; and a new class of wear resistant films, based on ultrastrong, nonphase aluminum composites, was created. - A process for depositing diamondlike carbon films, on both insulating and conducting substrates, has been developed with high potential for electronic and enhanced strength applications. - The extreme radiation tolerance of icosahedral boron rich solids, important for miniature solid state neutron detectors and fission cells, was demonstrated.	- The effect of the chemical reactivity of molecular complexes on interfacial adhesion will be investigated with the IFM; the most efficient surface treatment for enhanced polymer adhesion to optical fibers will be identified and tested for strength; the effect of adsorbed gases and surfactants on the mobility of atoms and clusters on surfaces will be determined; and the role of surface stress in determining the surface properties of solid materials will be examined. - A new photoresist technique for patterning of Copper Teflon will be applied to the fabrication of operating microwave circuits. - Continue effort to optimize nanocavity formation in silicon and study electronic properties of gettering of other impurities and continue to pursue the growth of high quality diamond films on various substrates.	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued)

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
b. Core Research and Advanced Technology	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued) COMPUTATION AND MODELING: Computation and Modeling are essential to the development, enhancement, and maintenance of simulation codes and databases for the weapons program. In the absence of underground nuclear testing, computational simulation of nuclear events becomes the critical core of weapons predictive capability and science-based stockpile stewardship. Computation and Modeling supports work in theoretical physics, mathematical modeling, and software and algorithms. In addition, research is exploring parallel computer architectures, neural networks, and other new computer architectures, as well as the new computational methods that are needed to fully exploit the power of these advances. Distributed computing systems, based upon high speed data communications techniques, are also being explored. - Improved physics models, numerical solution algorithms, and computer science techniques for the 3D codes that allow more detailed problems to be run more efficiently in support of requested safety assessments for primaries. - Initial implementation was completed and evaluation was begun for converting	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued) COMPUTATION AND MODELING: Computation and Modeling are essential to the development, enhancement, and maintenance of simulation codes and databases for the weapons program. In the absence of underground nuclear testing, computational simulation of nuclear events becomes the critical core of weapons predictive capability and science-based stockpile stewardship. Computation and Modeling supports work in theoretical physics, mathematical modeling, and software and algorithms. In addition, research is exploring parallel computer architectures, neural networks, and other new computer architectures, as well as the new computational methods that are needed to fully exploit the power of these advances. Distributed computing systems, based upon high speed data communications techniques, are also being explored. - Complete the evaluation of running the 2D weapons codes on scientific workstations as an alternative to traditional supercomputers. Based on the results of this evaluation, develop and begin implementing a plan for the future support and/or development of these codes. - Develop and begin implementing a plan	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued) COMPUTATION AND MODELING: Computation and Modeling are essential to the development, enhancement, and maintenance of simulation codes and databases for the weapons program. In the absence of underground nuclear testing, computational simulation of nuclear events becomes the critical core of weapons predictive capability and science-based stockpile stewardship. Computation and Modeling supports work in theoretical physics, mathematical modeling, and software and algorithms. In addition, research is exploring parallel computer architectures, neural networks, and other new computer architectures, as well as the new computational methods that are needed to fully exploit the power of these advances. Distributed computing systems, based upon high speed data communications techniques, are also being explored. Areas of current interest in the application of these technologies include assessments of complex or unique accident scenarios, and improvement of predictive capability for weapon design and performance, particularly in support of science-based stockpile stewardship. Areas of current emphasis include predictive capability, dynamic response models, 3D simulation, distributed computing, visualizat'

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	several of the 2D weapons design and analysis codes to operate on scientific workstations. - Improved the physics models, numerical solution algorithms, and computer science techniques for the 2D Inertial Fusion (ICF) design and analysis code in support of the ICF program and National Ignition Facility target design. These improvements resulted in the first integrated calculations of the National Ignition Facility target and its surrounding environment. - Developed a preprocess to convert a DYNA3D model file into parallel form and partitions, and assigned decomposition domains for multiple processors. Ran a demonstration problem of 100,000 elements for plutonium transportation container. - Codes used to access LLNL nuclear data libraries were rewritten for compatibility with workstation platforms. Developed new particle transport codes and data files to address medical and defense applications requiring nuclear reactions in the 20-100 MeV energy range. - Fourteen equation of state (EOS) tables and models were prepared for hydrodynamic code users. Major upgrade in EOS generator code is underway, giving an improved capability to fit experimental data and generate accurate tables. - Code improvements in multidimensional	for providing the physics models required for aboveground, underground, and Inertial Fusion experiments as well as those required for weapons design and assessment in a single set of codes. - Develop and begin implementing a plan for porting and supporting the appropriate codes to a new supercomputer in support of near and long term programmatic needs. - Continue radiation transport code improvements and benchmark code performance runtime and storage optimization. - Develop a prototype encryption engine that is both scalable and in the gigabit transmission range. This technology may permit the transmission of "classified" or "sensitive" high performance computing data over public networks. - Implement symbolic computational modeling methods for nonrigid objects that will enable design analysis and feedback for complex assemblies and the development of a mechanics analysis code which will permit the predictive analysis of manipulation tasks such as parts feeding.	tools, massively parallel processing, component design, and robotics algorithms.

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	electron transport for IEMP analysis of complicated electronics were completed and testable design geometries for IEMP mitigation were validated for use in modified, upgraded or advanced components. - Performed radiation experiments on advanced microprocessors for modeling work, on photonics that have possible application to weapon fuzing systems, on Direct Optical Initiation (DOI) Hardware, and on an advanced developmental encryption translator and other associated electronic hardware. - An evaluation and modeling of experimental techniques for dose rate dependent electronics was completed. - A project to develop a next generation data acquisition system instrumentation control and readout software package for Saturn and HERMES III was initiated. - Validated the 3D shock physics code, CTH, as a production code using the capabilities of the Paragon Parallel Computer. - Advanced models for dynamic fragmentation, the dynamic failure of concrete, and the microscopic behavior of fiber reinforced composite materials were integrated into production codes. - Developed the theory and implementation of robot path planning algorithms for automatic programming of manufacturing robots. - Developed a new symbolic computational approach to modeling	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued)	DESIGN ASSESSMENT SCIENCE & TECHNOLOGY (continued)

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	nonrigid materials, a tool that is essential to the task planning of assemblies such as cable harnesses, and developed and implemented an optimization based approach to the specification of the initial conditions of incompletely specified physical modeling systems.		
	Subtotal, Design Assessment Science & Technology $ 222,960	Subtotal, Design Assessment Science & Technology $ 219,841	Subtotal, Design Assessment Science & Technology $ 236,920

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
b. Core Research and Advanced Technology	SYSTEMS & COMPONENTS SCIENCE & TECHNOLOGY SYSTEMS ENGINEERING: Systems Engineering capabilities enable the integration of components and systems that are required to sustain the nuclear deterrent, for incorporation of new technologies into weapon systems and stockpile support operations (e.g., improved radiation-hardened nonvolatile semiconductor memories, multi-chip codules, smart electronic packaging), and for demonstration or prototyping of emerging technologies (e.g., vertical cavity lasers, strained layer superlattices, sticky/aqueous foams). - Made operational a high resolution computer assisted tomographic (CAT) system with features that include measurement of ultra-small material density variation in high explosives, mixed plastics, green ceramics, and pressed metals. - Installed selective laser centering system which can build up plastic models directly from computer simulation in an integrated Computer-Aided Engineering/Computer-Aided Manufacturing environment. - Developed weapons safing technology usable in a variety of situations	SYSTEMS & COMPONENTS SCIENCE & TECHNOLOGY SYSTEMS ENGINEERING: Capabilities enable the integration of components and systems that are required to sustain the nuclear deterrent, in order for incorporation of new technologies into weapon systems and stockpile support operations (e.g., improved radiation-hardened nonvolatile semiconductor memories, multi-chip codules, smart electronic packaging), and for demonstration or prototyping of emerging technologies (e.g., vertical cavity lasers, strained layer superlattices, sticky/aqueous foams). - Develop an integrated non-destructive evaluation test stand that integrates a combination of techniques including computer-assisted tomography with acoustic, optic or radiographic methods. - Develop computer solid models for multipart systems that have resolution appropriate for analysis/design work, and plastic parts will be produced to evaluate assembly capabilities. - Explore virtual reality computer tools relevant to weapons assembly and dismantlement to provide a road map for a direct application.	SYSTEMS & COMPONENTS SCIENCE & TECHNOLOGY SYSTEMS ENGINEERING: Capabilities enable the integration of components and systems that are required to sustain the nuclear deterrent, in order for incorporation of new technologies into weapon systems and stockpile support operations (e.g., improved radiation-hardened nonvolatile semiconductor memories, multi-chip codules, smart electronic packaging), and for demonstration or prototyping of emerging technologies (e.g., vertical cavity lasers, strained layer superlattices, sticky/aqueous foams). Associated systems analysis capabilities guide research and development by enabling the monitoring and assessment of new technologies, external threats, command structures, stockpile configurations, mission requirements, and the national security implications of developments in each of these areas. Capabilities in systems engineering are currently being exercised in support of Command and Control (integrated use control and security applications, embedded sensors, intelligent micromachines, advanced failure models, computational algorithm mesh generation and visualization software), Performance Instrumentation and Safing, Arming, Fusing and Firing (tamper-proof

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	ranging from full weapons at operational sites to accidentally opened weapons, and to components in long-term storage. - Developed and demonstrated the application of a gridless simulation approach for treating the coupled fluid structure problems that are important for many surety applications. - Initiated a program to develop constitutive models that describe damage and crush in composite materials, important for response reduction in advanced designs utilizing composites. - The coupling of material science and engineering simulation for the prediction of microstructural evolution in solder was demonstrated. - Developed a coupled thermomechanical model for the prediction of weld distortion in fusion welding processes and an adaptive interface tracking methodology that permits the accurate simulation of a wide range of manufacturing flows. - Demonstrated the applicability of quasistatic simulator technology to metal forming problems for the prediction of necking and tearing as a function of the forming process parameters.	- Continue development of computational models to describe an advanced single-mode fiber optic star coupler for high capacity information network applications. - Continue to collaborate in commissioning and developing gamma-ray detectors for GAMMASPHERE, a premier facility for nuclear spectroscopy relevant to basic science and to applications requiring detailed knowledge of nuclear properties. Conduct experiments using this facility to demonstrate characteristics of these detectors. - Continue development of a new isotopic analytical tool which combines particle induced emission (PIXE) and accelerator mass spectrometry (AMS). This tool will open the possibility to analyze all isotopes of the periodic table and allow the detection of special nuclear materials at ultra-low levels. - Mesh generation software that permits the automated meshing of complex 3D objects will be released, furthering implementation of "information rich design." - Complete initial development for the production of adaptive gridding methods with the Sandia Engineering Code System for transient dynamic and quasistatic analysis, greatly improving the ability to simulate the complex nonlinear response encountered in weapon surety and manufacturing applications. - Complete experimental measurements involving the flow visualization of	electro-mechanical links). Opportunities presented by the reduction of the strategic threat will be used to interface with a mix of commercial vendor design, analysis and manufacturing systems to explore component standardization, modularity, and reuse for the manufacture of small-lot, ultra-high reliability components and subsystems while reducing both costs and waste generation. FY 1996 activities will include: - Develop low cost, smart process access and design; controlled vapor deposition software; advanced failure models, computational algorithms, mesh generation, and visualization software; predictive models for fiber optics in radiation environments; cluster recognition techniques and UV fluorescence remote sensing; the next generation neutron generator; and advanced visualization techniques to display material defects. - Conduct research in the areas of integrated systems for use control/security applications; advanced nondestructive testing and evaluation techniques; stress measurements inside metals; and advanced surveillance methodologies and sensors to address the increasing vulnerability of the older, less diverse stockpile.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	SYSTEMS & COMPONENTS SCIENCE & TECHNOLOGY (continued)	large scale mixing structures in turbulent shear flows. Will demonstrate the application of advanced simulation capability to high speed reactive multiphase flows such as those encountered in thermal spray and high pressure gas atomization processes. - Robustness of current welding simulator capabilities will be extended to include additional welding processes, such as friction and laser welding, and the applicability of gridless simulation to friction welding will be demonstrated.	SYSTEMS & COMPONENTS SCIENCE & TECHNOLOGY (continued)
	ELECTRONICS, PHOTONICS, SENSORS & MECHANICAL COMPONENTS: Capabilities provide the enabling technologies behind the components and subsystems that control and operate nuclear weapons. - Optimization of imaging components for digital radiography were tested to optimize images at 4 and 9 MeV and 160 to 450 KeV. Components include high resolution solid state cameras, high density scintillation glass of different thicknesses and fiber optic light coupling components. - Performed experiments to measure and minimize internal reflections in high density scintillating glass. - Developed a hyper-spectral remote sensor capable of imaging plumes of many distinct chemical species in the air with near real time image display. Images can be obtained in about 60 seconds with roughly 1000 spectral channels in each pixel to provide quasi-real time images of distinct	ELECTRONICS, PHOTONICS, SENSORS & MECHANICAL COMPONENTS: Capabilities provide the enabling technologies behind the components and subsystems that control and operate nuclear weapons. - In the area of synthetic aperture radar, interferometric change detection, topographic mapping, and low frequency ground penetrating imaging radar will be demonstrated. - A known-good-die and boundary scan test techniques will be developed and demonstrated and the flipchip form of thin film capacitors for energy storage and decoupling will be demonstrated. A Weapon Support Agreement will be established with a capacitor supplier to ensure commercial availability. - The self discharge kinetics of lithium thionel chloride batteries will be characterized. - Will integrate diffractive optical elements into complete photonic	ELECTRONICS, PHOTONICS, SENSORS & MECHANICAL COMPONENTS: Capabilities provide the enabling technologies behind the components and subsystems that control and operate nuclear weapons. Photonic devices used in conjunction with microelectronic systems offer opportunities for improved safety, security, reliability, and information processing. Further development in this area will provide intelligent systems that monitor and diagnose the condition of a weapon with regard to aging, functional status, intrusion/tamper detection, and anticipated performance. Emphasis is on improved safety in abnormal environments, enhanced command and control, automated monitoring and inventory control, command disablement, and intelligent manufacturing based on the use of robotics. FY 1996 activities will include: - Development of improved radiation-hardened nonvolatile semiconductor memories.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	chemical plumes. - Used slow very highly charged ions extracted from the Electron Beam Ion Trap to study ion-surface interactions, the production of nanometer size surface defects, and the emission of secondary charged particles. These experiments open the possibility of modifying insulators and semiconductors on nanometer scale. - Developing computational models to describe an advanced single-mode fiber optic star coupler for high capacity information network applications. - Tests have been conducted of an imaging gamma-ray detector for characterizing the contents of a nuclear warhead, in support of "transparency" investigations, and as a benchmark of imaging simulations. - Realtime synthetic aperture radar imaging with world record resolution was demonstrated and the technology was transferred to the Verification and Control Technology Program for further development and application. - A Quality Function Deployment Process was developed to identify the essential facilities and skills for the development of nuclear weapon subsystems and a pilot project to test/validate the process was completed for firing systems. - A carbon anode material for lithium ion batteries with state-of-the-art performance was developed and prototype batteries were successfully fabricated with industrial partners.	integrated circuit designs, demonstrate a comprehensive numerical code for modeling and optimization of vertical cavity lasers, integrate AlGaInP alloys into AlInGaAs electronics using robust manufacturing techniques, and develop processes for monolithic integration of microwave passive elements into complementary compound semiconductor logic. - Will establish high performance arrays of emitters and detectors for free-space photonic interconnects, develop multiple wavelength sources for ultimate use in integrated absorption spectrometers to monitor chemical byproducts for weapons state-of-health monitors, and design and build devices and passive components for >10Ghz operation.	- Development of smart electronics packages. - Conduct of studies for fabrication of vertical cavity lasers. - Development of imbedded sensors and intelligent micromachines. - Development of tamper-proof electro-mechanical links. - Development of high power switching and amplifiers for Direct Optical Ignition. - Development of advanced multichip modules with an order of magnitude increase in computing power per unit volume.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	- Implemented in SNL's Center for Microelectronics Technologies the state of the art IBM "Lightning" Technology for 256K static random access memories. - Produced the most powerful existing microengine, a microsteam engine which generated one hundred times the force of conventional electrostatic micromotors, and developed the first microgears as a candidate miniature stronglink for weapons surety. - Developed a new, low voltage, very high speed integrated circuit technology using complementary strained layer junction field effect transistors and demonstrated delays of only 179 ps/gate with 28 fJ switching power for fully loaded, thirty one stage ring oscillator circuits. - Developed a radically new concept, called photonic lattices, that attempts to exploit the world's most perfect optical structures, microlaser arrays, to control and direct light propagation. This technology holds the promise of exceptionally efficient, "zero-threshold" solid state lasers. - Developed, applied, and quantified numerical codes for the prediction of debris production from the SNL pulsed x-ray lithography laser source. Achieved a one thousand fold reduction in debris production from Sandia's Laser Plasma Source.		
	Subtotal, Systems and Components Science & Technology $110,001	Subtotal, Systems and Components Science & Technology $ 94,739	Subtotal, Systems and Components Science & Technology $ 94,318

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
b. Core Research and Advanced Technology	CHEMISTRY & MATERIALS SCIENCE & TECHNOLOGY	CHEMISTRY & MATERIALS SCIENCE & TECHNOLOGY	CHEMISTRY & MATERIALS SCIENCE & TECHNOLOGY
	The special nature of nuclear weapons requires a diverse range of Chemistry and Materials expertise, facilities support, and technological capability. The specialized materials developed and used, the unique life span and reliability requirements, and the need to withstand extreme mechanical and thermal environments create a unique set of materials science challenges. Continuous research and technology development is required in the areas of metallurgy, ceramics and inorganics, organic materials and polymers, and composites. - Developed porous ceramic membrane whose hydrodynamic pore size allows separation of gases at pressures up to 300 pounds per square inch. This product aids separation of tritium from other gases. - A dilute casting alloy was developed based upon uranium. It improves grain size control to the stage where near-net-shape casting can be achieved without compromising material properties and performance. - Constitutive relationship development for material performance at extreme conditions of high strain rate,	The special nature of nuclear weapons requires a diverse range of Chemistry and Materials expertise, facilities support, and technological capability. The specialized materials developed and used, the unique life span and reliability requirements, and the need to withstand extreme mechanical and thermal environments create a unique set of materials science challenges. Continuous research and technology development is required in the areas of metallurgy, ceramics and inorganics, organic materials and polymers, and composites. - Test new adhesive for use with high explosives. This new adhesive will use catalyst systems appealing for environment, safety and heath considerations. - A direct hydrodynamic comparison will be made between uranium components produced by near-net-shape casting and traditional processing technologies. The cost benefit of direct casting for waste minimization will be evaluated. - Constitutive relationship development will be extended to other materials of significance.	The special nature of nuclear weapons requires a diverse range of Chemistry and Materials expertise, facilities support, and technological capability. The specialized materials developed and used, the unique life span and reliability requirements, and the need to withstand extreme mechanical and thermal environments create a unique set of materials science challenges. Continuous research and technology development is required in the areas of metallurgy, ceramics and inorganics, organic materials and polymers, and composites. Current activities include tailored materials, development of low toxicity alternative materials to reduce the environmental, safety and health concerns associated with weapons production, maintenance, and dismantlement. FY 1996 activities will include efforts to: - Develop materials and processes to minimize worker hazards and mitigate the environmental impact of weapons systems and component production realization cycle. - Develop key advanced materials and/or manufacturing processes to enable use of new materials/processes to improve stockpile safety and reliability and

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	temperature, and large plastic strain has shown good correlations for heavy metals such as tantalum, tungsten, and molybdenum. - Developed a new titanium-tantalum alloy for fire resistant pit applications. The material is oxygen resistant, formable, machinable and not susceptible to liquid metal embrittlement. - Developed technology for direct casting of an alloy of uranium that conforms to weapons specifications. - Demonstrated the feasibility of using transient liquid phase bonding to join refractory NiAl intermatallics and extended the technique to MoSi2. - Completed an initial series of experiments to measure the mechanical properties of bicrystals of Ni3Al doped with boron and also complementary theoretical calculations. - Fabricated and began testing bonds between sapphire and high purity aluminum foils of thickness from 25 to 200 mm. This experiment aims to elucidate the effect of the constraint induced by the thinness of the metal foil on the fracture of this interfacial system. - A successful technique has been implemented to fabricate layers more uniformly over a larger surface of a part. This technology may be a viable method to achieve a fire-resistant pit that could be implemented in a future stockpile improvement plan.	- Start new initiative in enhanced surveillance to develop tools to better predict onset of aging effects and their impact, reliability and performance. - Continue on U-V phase transformation studies in order to produce fine grain size, full scale parts for possible hydrotests. - Compare metallurgical properties of current tantalum hydrotest parts with those made by alternate methods, such as spin forming. - Study new means of nonintrusively monitoring minute physical changes in systems in the Stockpile to ascertain detrimental physical changes which occur in normal weapon environments. These material changes will be fit calculationally to models under development to provide new predictive models for stockpile life and aging. - Initiate research into the detection and prediction of slow degradative reactions which liberate small reactive molecules over long times in HE formulations which in turn compromise other weapon materials. - Develop in situ sensors that will enable us to carefully monitor changes in the aging behavior of materials in stockpile in real time on statistically large numbers of weapons, as well as provide us with tools to monitor environmental surroundings of weapons in storage. - Efforts in the model based design of weldments and fixtures will be extended	reduce cost/cycle time. - Develop atomic resolution of metal surfaces to study aging. - Improve the fundamental understanding of interfacial bonding. - Develop the characterization/understanding of gas/actinide surface interactions. - Improve the basic understanding of deformation processes used in fabricating critical weapons materials. - Develop porous ceramic membranes for advanced boost systems. - Demonstrate cross-linked polystyrene foam for special applications. - Perform coupling of base hydrolysis with supercritical water oxidation or bioremediation. - Develop advanced material models.

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III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	- Moved methods and technologies developed in advanced casting processes to a potential supplier group and used these methods and this supplier base to produce prototype parts for use in defense programs development projects. This effort achieved reduced delivery times, higher product quality, and reduced cost. - Developed thermoset epoxy formulations that can replace the methylene dianiline systems used in high temperature, high performance, applications in weapon components and initiated experiments designed to qualify their use in neutron generators. These formulations will eliminate the use of a known human carcinogen from weapons production. - Alternative cross linking agents in high performance elastomers were demonstrated. This work is focused toward replacing a known human carcinogen in weapon seals and coatings. - A variety of lead-free solders were characterized for their potential use in weapon components. - Developed and demonstrated processes to deposit hard diamondlike carbon coatings on parts used in weapon stronglinks in an effort to eliminate use of ozone depleting solvents used with conventional lubricants. - Developed a new analytical technique for ultrasensitive measurements of polymer aging, demonstrated a new lithographic process for uv patterning of 0.2 micron features, and developed	to other materials and processes of interest, including the forming and forging of metals. - Will extend development of thermoset epoxy formulations and will qualify them for use in other components, including thermal batteries. The characterization and testing of alternative anticorrosion coatings will also proceed to ensure that they are acceptable replacements for the carcinogenic hexavalent chromium that is currently being used. - Will determine the brazability of cermets, validate constitutive models for the simulation of metal flow during metal forming, model heat flux from laser and variable polarity plasma arc welding processes, and develop a first order model of the hot cracking of welds. - In the area of polymers, concentration gradients during polystyrene thin film syntheses will be measured, a fundamental understanding of xerogel vs aerogel formation will be developed, the mechanical property changes induced by microstructure changes in foams will be measured, new high stability materials for light emitting diodes will by synthesized, and a high reliability lifetime prediction technique for elastomers will be demonstrated. - In ceramics, the effects of ligands, chelating agents, and solvents on sol-gel film fabrication will be determined; the influence of substrate orientation and type on the nucleation and growth of PZT films will be	CHEMISTRY & MATERIALS SCIENCE & TECHNOLOGY (continued)

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	techniques to measure nanometer pores and webs in porous materials. - In ceramics, determined the mechanism of optical image storage in thin film PZT ferroelectrics, improved the quality of sol-gel films using acetylacetonate as a chelating agent, developed a spectrally resolved light scattering technique for optical quality of films, and improved the adhesion of diamondlike carbon to stainless steel.	measured; and the piezoelectric activity of PZT thin films will be determined. - Fully automated backscattered electron Kikuchi pattern indexing and a method to measure plastic deformation using micro-Laue technique will be developed.	CHEMISTRY & MATERIALS SCIENCE & TECHNOLOGY (continued)
	HIGH EXPLOSIVES: Research and technology development in the area of Explosives includes expertise in high energy density materials and the associated detonation systems that enable nuclear detonations. - High resolution diagnostics were used to validate hydrocode calculations of shaped charge liner implosion and ejecta formation history over entire surface of liner. Obtained the first direct measurement of shaped charge jet rotation, induced by liner processing. - Built a Molten Salt Reactor and demonstrated the low-cost and safe destruction of DOE explosives with low emissions of carbon monoxide and NOx. - Characterized the Transferable Insensitive Explosive (TIE) RX-52-AD and RX-52-AE for main charge application, including formulation of these explosives, computational and experimental evaluation of their energetics, compatibility tests and thermal stability tests. - In support of work on Direct Optical	HIGH EXPLOSIVES: Research and technology development in the area of Explosives includes expertise in high energy density materials and the associated detonation systems that enable nuclear detonations. - Continue development of equation of state models describing detonation, reactive flow models, and development of the thermochemical code CHEETAH. - Continue the development of the coupled thermal-chemical-mechanical code LYNX2D and insert this capability into ALE3D to establish a thermal-chemical-mechanical-hydrodynamic capability. Examine the response of conventional and insensitive HE to thermal stress. - Determine the ignition and combustion of properties to HMX-based explosives at elevated temperatures and pressures, and evaluate the response of TATB-based explosives to abnormal mechanical stimuli. - Support waste disposal activities through continued research directed at	HIGH EXPLOSIVES: Research and technology development in the area of Explosives includes expertise in high energy density materials and the associated detonation systems that enable nuclear detonations. A primary focus of the current effort is the development and application of more powerful insensitive High Explosives (IHE) that will more efficiently detonate weapons when desired with less required explosive, while remaining highly resistant to unintentional detonation through handling accidents or other mishaps. This focus supports development of materials, associated application techniques, and detonation systems that offer improvement in safety, performance, and ease of environmentally benign disposal. Primary concerns include aging effects in explosives with long stockpile service lives and the reaction of these materials to abnormal environments. FY 1996 activities will include: - Document pilot scale HE disposal operations.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	Initiation of explosives, laser-acceleration of thin flyer plates deposited on the surface of an optical fiber have been measured through microdetonics photography on nanosecond time scale. - A VISOR laser velocimeter system was installed in the Microdetonics facility. This system will be used to develop economical small-scale performance tests for high explosives.	molten salt destruction of HE. - Support program activities for the High Explosive Applications Facility (HEAF). Install and activate a velocimeter on 10kg tanks at HEAF. - Continue efforts in optical detonators. Evaluate methods for a 90 degree turn and prototype one in an optical detonator. - Design and fabricate next generation direct optical ignition firing set. - Generate data on the nature and extent of damage in PBX 9501 subjected to low velocity impact. Use characterization of damage as input to DDT modeling efforts. - Conduct experiments on the compaction, heating, and reaction of porous explosive compacts subjected to shock loading. Use to guide theoretical efforts in modeling of DDT and impact response explosives. - Model material response of plastic bonded PBXs at the grain size level, including individual effects of binding and explosive particles. Use to develop understanding of ignition modes, strain localization and damage evolution reactions violence.	- Continue effort to develop weapon capability of enhanced safety optical firing technology through prototype hardware development. - Continue characterizing ignition, deflagration, and detonation mechanism for HMX and TATB-based explosives. - Continue characterization of the thermal properties of HMX and TATB-based explosives at elevated pressure. - Continue characterization of chemical decomposition kinetics at elevated temperature and pressure. - Continue characterization of the response of TATB and HMX-based explosives subjected to mechanical stimuli. - Continue characterization of material properties, both performance and sensitivity, of the aging explosives in the current stockpile.
	SPECIAL NUCLEAR MATERIALS: Research in Special Nuclear Materials (SNM) enhances our understanding of the physical, mechanical, chemical and thermodynamic properties of actinides such as plutonium, uranium, neptunium, and others.	SPECIAL NUCLEAR MATERIALS: Research in Special Nuclear Materials (SNM) enhances our understanding of the physical, mechanical, chemical and thermodynamic properties of actinides such as plutonium, uranium, neptunium, and others.	SPECIAL NUCLEAR MATERIALS: Research in Special Nuclear Materials (SNM) enhances our understanding of the physical, mechanical, chemical and thermodynamic properties of actinides such as plutonium, uranium, neptunium, and others. This knowledge is fundamental to the development of

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	- Demonstrated recovery of uranium from residues at a small scale. Demonstrated the use of a new process to recover plutonium from the surfaces of different materials, decontaminating the surfaces at less than the low level waste requirements. - Through consolidation at LANL, closed one special nuclear materials storage facility. - Measured nuclear cross sections of interest for accident scenarios at the Los Alamos Critical Experiments Facility (LACEF).	- Utilize critical assemblies to qualify and calibrate alarms for material handling problems, to calibrate dosimetry, and to improve safeguards assay techniques. - Continue to maintain the capability to perform experiments for determination of the state and material response of plutonium. - Continue development of methods for characterization of pits in the continuing stockpile and continue to improve ability to project future changes in material properties, especially plutonium. - Continue the development of non-invasive assay techniques for plutonium and uranium in storage and support design concepts to reduce worker exposure during storage operations. - Continue to maintain the capability to perform experiments at the Los Alamos Critical Assembly Facility. - Continue to provide support for the Superblock facility at Lawrence Livermore National Laboratory.	environmentally benign fabrication, handling, and storage capabilities and include advanced and automated plutonium processing, casting, and machining technologies. These process technologies will improve weapon safety, facilitate monitoring as the stockpile ages, and reduce both waste generation and worker exposure.
	TRITIUM: Tritium is an essential material in nuclear weapons and a proposed fuel for inertial fusion targets. This program includes material science research relevant to the production, handling, and use of this limited life material and to ensuring its compatibility with other materials and components. This activity will continue in importance as the stockpile ages.	TRITIUM: Tritium is an essential material in nuclear weapons and a proposed fuel for inertial fusion targets. This program includes material science research relevant to the production, handling, and use of this limited life material and to ensuring its compatibility with other materials and components. This activity will continue in importance as the stockpile ages.	TRITIUM: Tritium is an essential material in nuclear weapons and a proposed fuel for inertial fusion targets. This program includes material science research relevant to the production, handling, and use of this limited life material and to ensuring its compatibility with other materials and components. This activity will continue in importance as the stockpile ages.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)	- Weapons Experimental Tritium Facility (WETF) became operational. Moved valuable hardware for installation from SNL's closing Tritium Research Lab.	- Continue tritium consolidation by moving SNL Tritium Research Lab's tritium function stations to LANL's WETF.	The design, production, and fielding of gas transfer systems involve issues in material characterization, performance modeling, and aging phenomena. There are currently four broad areas of study within this program: gas transfer systems, solid storage systems, neutron generator tubes, and inertial fusion targets. - Maintain the operation of the Weapons Experimental Tritium Facility to meet programmatic needs and compliance with regulations and orders. - Continue to support maintenance of technologies to clean up tritium-contaminated articles and recover tritium in the most efficient methods possible.
	Subtotal, Chemistry and Materials Science & Technology $ 54,513	Subtotal, Chemistry and Materials Science & Technology $ 48,383	Subtotal, Chemistry and Materials Science & Technology $ 49,049

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
b. Core Research and Advanced Technology	MANUFACTURING TECHNOLOGIES - High explosive operations at LANL were consolidated, resulting in cost reduction. - Explosive engineers collaborated with the Moore Tool Company and Pantex engineers to evolve a next-generation multi-axis machine tool that reduces the number of operators for a complete process by a factor of five by performing spindle-to-spindle transfer and switching between machining and inspection operations. - Developed an automated method of fabricating 3D metal parts by fusing metal particles in the focus of a laser beam. The resulting parts are 100% dense, have excellent structural properties and exhibit near net shape. - Capability to manufacture lithium parts was recaptured by setting up a dry box line and completing a study of density versus pressing parameters.	MANUFACTURING TECHNOLOGIES - Demonstrate the capability to manufacture weapons case components utilizing baseline production technologies. - Produce a complete set of lithium parts. - Retain manufacturing capability to produce a limited number of primaries for research and development purposes. - Will use novel assembly optimization algorithms to develop a design-for-assembly design tool. Work will also be extended to produce computational methods that will allow assembly path sequences to be automatically converted to assembly robot scripts.	MANUFACTURING TECHNOLOGIES - Exploit advanced computer/sensor/process technologies to enable maximum understanding/control of key weapons manufacturing process. - Exploit advanced computer/sensor/process technologies to enable embedding of process intelligence in the design phase of product realization cycle. - Develop advanced engineering models of materials response for manufacturing applications. - Develop computer design of materials for manufacturing applications. - Develop a product realization system that yields reliable components and subsystems with reasonably fast cycle time using principally commercial materials, components, processes and manufacturing. - Develop the ability to interface with a mix of commercial vendor design, analysis and manufacturing systems. - Design tools and process analysis techniques that enable manufacture of small-lot, ultra-high reliability components and subsystems.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Core Research and Advanced Technology (Cont'd)			- Develop intelligent micromachines. - Develop process to minimize worker hazards and mitigate the environmental impact of weapons systems and component realization cycle. - Evolve gas transfer technology facilities and product realization techniques.
	Subtotal, Manufacturing Technologies $ 10,158	Subtotal, Manufacturing Technologies $ 14,100	Subtotal, Manufacturing Technologies $ 20,008
	TOTAL CORE RESEARCH & ADVANCED TECHNOLOGY: $397,641	TOTAL CORE RESEARCH AND ADVANCED TECHNOLOGY: $377,063	TOTAL CORE RESEARCH & ADVANCED TECHNOLOGY: $400,295

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
c. Testing Capabilities and Readiness	TESTING CAPABILITIES & READINESS The President's July 3, 1993, policy statement extended the moratorium on underground nuclear testing through the end of FY 1995 and directed the Department of Energy to maintain the capability to resume testing while redirecting the efforts of the laboratories to compensate for the end of testing through an enhanced stockpile stewardship program. This category supports that policy by supporting the infrastructure requirements of the Nevada Test Site such that it is available for the Department's experimental activities.	TESTING CAPABILITIES & READINESS The President's directive of November 3, 1993, extended the moratorium on underground nuclear testing through the end of FY 1995, while directing the DOE to maintain the capability to resume testing. The FY 1995 program transitions to a 2-3 year readiness posture to conduct a full test program. DOE could execute one underground nuclear test within six months, if directed by the President, and assuming a reallocation of funding within the Weapons Research & Development - Stockpile Stewardship account (appropriation line item) from the laboratories to the Nevada Test Site. This category supports the maintenance of the capability to resume underground nuclear testing and also allows for the use of the test site for other Departmental uses. Reduction from FY 1994 reflects adjustment of overhead charges to reflect declining test program relative to other programs at the NTS, a reduction in readiness from a 6-month standby readiness posture for a full test program to a readiness posture supporting a return to a full test program within 2 to 3 years, and an appropriation reduction attributed to the ability of the Test Site to use balances appropriated in prior years.	TESTING CAPABILITIES & READINESS This category provides for the maintenance of the Nevada Test Site infrastructure to allow for the resumption of underground nuclear testing within three years from direction to test, and to allow for the continuing use of the Test Site for other Department missions and requirements.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
c. Testing Capabilities and Readiness (Cont'd)	MAINTENANCE OF NTS INFRASTRUCTURE. Activities included: Maintenance of physical infrastructure including buildings and structures, electrical power transmission and distribution power lines, roadways, airstrips, and heliports needed for emergency, environmental, and security activities, water wells and associated supply and distribution lines, and electronic communications system including computers, alarms, and telephone system; General site security including onsite law enforcement, intruder prevention and interception, and real property protection; Site-wide environmental, safety, and health functions including compliance with federal and state environmental laws and regulations (RCRA, SARA, SWDA, American Indian Freedom Act, Endangered Species Act, Archeological Resources Protection Act, Fish and Wildlife Conservation Agreement, OSHA); radiation safety; ongoing geology, hydrology and meteorology activities; onsite and offsite radiation exposure monitoring and review programs; and compliance with DOE environmental, occupational safety and health, and medical orders; and support for federal personnel with direct oversight of the NTS and related activities. READINESS TO RESUME TESTING: Provided support for those activities necessary to maintain the active readiness of the NTS personnel to conduct an underground nuclear test.	MAINTENANCE OF NTS INFRASTRUCTURE: Activities include: Maintenance of physical infrastructure including buildings and structures, electrical power transmission and distribution power lines, roadways, airstrips and heliports needed for emergency, environmental and security activities, water wells and associated supply and distribution lines, and electronic communications system including computers, alarms, and telephone system; General site security including onsite law enforcement, intruder prevention and interception, and real property protection; Site-wide environmental, safety, and health functions including compliance with federal and state environmental laws and regulations (RCRA, SARA, SWDA, American Indian Freedom Act, Endangered Species Act, Archeological Resources Protection Act, Fish and Wildlife Conservation Agreement, OSHA); radiation safety; ongoing geology, hydrology, and meteorology activities; onsite and offsite radiation exposure monitoring and review programs, and compliance with DOE environmental, occupational safety and health, and medical orders; and support for federal personnel with direct oversight of the NTS and related activities. READINESS TO RESUME TESTING: Provides support for those activities necessary to maintain the active readiness of the NTS personnel to conduct an underground nuclear test program within 2 to 3 years and to conduct a simple test	MAINTENANCE OF NTS INFRASTRUCTURE: Activities include: Maintenance of physical infrastructure including buildings and structures, electrical power transmission and distribution power lines, roadways, airstrips, and heliports needed for emergency, environmental and security activities, water wells and associated supply and distribution lines, and electronic communications system including computers, alarms, and telephone system; General site security including onsite law enforcement, intruder prevention and interception, and real property protection; Site-wide environmental, safety, and health functions including compliance with federal and state environmental laws and regulations (RCRA, SARA, SWDA, American Indian Freedom Act, Endangered Species Act, Archeological Resources Protection Act, Fish and Wildlife Conservation Agreement, OSHA); radiation safety; ongoing geology, hydrology, and meteorology activities; onsite and offsite radiation exposure monitoring and review programs; and compliance with DOE environmental, occupational, safety and health, and medical orders; and support for federal personnel with direct oversight of the NTS and related activities. READINESS TO RESUME TESTING: Provides support for those activities necessary to maintain the active readiness of the NTS personnel to conduct an underground nuclear test within 3 years from direction to test.

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III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
c. Testing Capabilities and Readiness (Cont'd)	Activities included continued training and certification of procedures and capabilities required for underground nuclear testing including assembly and transportation, insertion and emplacement, timing and control, arming and firing, drilling, diagnostic, containment, event safety and security, and Test Control Center activities. Also includes the maintenance of test-necessary capital equipment and facilities to allow for eventual use in underground nuclear testing. Specific FY 1994 activities included: - Provided field support to conduct numerous readiness exercises, including BRAVEHEART, SHORTCAKE, NORITE, BISCUIT, CRUMPET, and containment plug placement as full dress demonstrations of capability to direct, engineer, and safely conduct an experiment within the mandated six-month time period. All aspects of the DOE, laboratory, and contractor capabilities were exercised. In addition, the post shot drilling capability to drill and recover samples was exercised on a full-scale drillback of the FY 1981 BASEBALL event, and an NTS geologic site description was developed for the BABA exercise. - Prepared the studies required for Nuclear Explosive Safety Studies (NESS) including: an assembly, storage, and transport study; an insertion and emplacement study; and the safety and risk assessments associated with these efforts. - The Sentinel and Affirm Test Readiness Exercises were pursued.	within 6 months. Activities will continue on a reduced level to maintain the training and certification of procedures and capabilities required for underground nuclear testing including drilling, diagnostic, containment, event safety and security. These capabilities will be exercised using policy compliant experiments and readiness exercises. Maintenance of test-necessary capital equipment and facilities to allow for eventual use in underground nuclear testing will be downgraded. Specific FY 1995 activities will include: - DOE/NV and integrated contractors will support the following proposed LANL activities: - Complete Lyner construction. Conduct KISMET, a high explosive experiment, in Lyner in January. Plan and design a third experiment in Lyner to be conducted in FY 1996. - In support of the above experiments in the Lyner facility, contractors will exercise the timing & firing (T&F) system; command, control, and monitor system; diagnostic instrumentation system setup, seismic system support, calibration, operation, dry runs, data collection, and data analysis. - Maintain the cold standby status of the ICECAP and FORTUNE ground zero and trailer park complexes. - One full-scale readiness exercise is planned for the LLNL downhole	Activities will continue to maintain the training and certification of procedures and capabilities required for underground nuclear testing including diagnostic, containment, and event safety at a level consistent with the Presidentially directed readiness posture of the Nevada Test Site. These capabilities will be exercised using policy compliant experiments and readiness exercises. Maintenance of test-necessary capital equipment and facilities to allow for eventual use in underground nuclear testing will be downgraded. Full scale readiness exercises are planned as required to prove capability to conduct a nuclear test. Due to budgetary constraints, the Environmental Protection Agency (EPA) readiness will be maintained primarily by participation in Nevada Test Organization (NTO) scheduled exercises. In addition, four field monitoring exercises will be conducted in the NTS offsite area. All archived data and procedures will be reviewed for completeness. Equipment not in use will be mothballed and stored. Survey instruments will continue to be calibrated and maintained in a state of readiness.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
c. Testing Capabilities and Readiness (Cont'd)	Recording and data acquisition systems and ground motion monitoring capability were maintained, and the readiness status documented. - Environmental Protection Agency participated in two Nevada Test Organization readiness exercises and four joint exercises with Air Resource Laboratory (ARL) to maintain the ability to conduct offsite radiological safety procedures in the event of the resumption of testing. Maintained routine environmental sampling and analysis for the areas surrounding NTS as well as activating the Standby Milk Sampling and Air Sampling Networks throughout the western United States.	techniques to prove continuing capability to contain a nuclear test. - Meteorological services will continue to play a vital role in the DOE/NV nuclear test readiness mission. The National Oceanic and Atmospheric Administration (NOAA), Air Resources Laboratory (ARL), Special Operations and Research Division (SORD) provides all the meteorological support for DOE/NV during nuclear test readiness operations. - In addition to test readiness support, SORD will continue to provide meteorological services to a wide variety of special projects, support to offsite programs, and to environmental assessments administered by DOE/NV. - EPA will continue participation in exercises and joint exercises with ARL. In addition, two field exercises will be conducted as readiness training in the offsite areas. Readiness will also be maintained by participation in refresher courses and emergency response exercises. Maintain sampling and monitoring equipment in a state of readiness and conduct environmental sampling as budgetary constraints allow. Will review and update all standard operating procedures to ascertain that procedures are recorded both for archival purposes and for readiness.	
	Subtotal, Testing Capabilities & Readiness $ 210,542	Subtotal, Testing Capabilities & Readiness $160,000	Subtotal, Testing Capabilities & Readiness $160,630

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
1. Operating Expense			
c. Testing Capabilities and Readiness	EXPERIMENTAL SUPPORT This category provides funding for the Nevada Test Site contractors to support laboratory experimental activities at the Nevada Test Site. Specific activities in FY 1994 at the Nevada Test Site include: - Completed design and began construction of the NTS Lyner site which could be used for future hydrodynamic experiments to assess the safety and reliability for the stockpile as well as primary physics issues related to the stockpile. - Designed a containment experiment for the NTS Lyner site. The purpose of the experiment, KISMET, is to evaluate the containment characteristics by detonating high explosives at the Lyner site. A nonproliferation assessment experiment has also been designed as part of the Kismet experiment. - Provided support for environment, safety, and health activities and studies for DOE and Defense Nuclear Facility Safety Board (DNFSB). Completed a Master Safety Study for Insertion and Emplacement required by DOE before an experiment like Kismet can be conducted. - Constructed Explosives Experiment	EXPERIMENTAL SUPPORT This category provides funding for the Nevada Test Site contractors to support laboratory experimental activities at the Nevada Test Site. Specific activities in FY 1995 at the Nevada Test Site will include: - Will finish NTS field operations and conduct Kismet, a containment characterization experiment with a nonproliferation assessment experiment. - Will provide support for environmental, safety, and health activities and studies for DOE and the Defense Nuclear Facility Safety Board (DNFSB). Expect to complete a Master Safety Study for Timing and Firing required by DOE before an experiment like Kismet can be conducted. - Will define and plan a hydrodynamic stockpile assessment experiment to be conducted in FY 1996.	EXPERIMENTAL SUPPORT The President extended the moratorium on underground nuclear testing through the end of FY 1995; however, it is not expected that the Department will be called upon to conduct an underground nuclear test during FY 1996. Therefore, activities will continue to emphasize laboratory efforts to experimentally compensate for the loss of testing, as implemented in the stockpile stewardship initiative. This category provides funding for the Nevada Test Site contractors to support laboratory experimental activities at the Nevada Test Site. Laboratory activities are funded within other Stockpile Stewardship categories.

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
c. Testing Capabilities and Readiness (Cont'd)	Facility at NTS in abandoned underground bunkers working towards HE calibration shots and Shaped Charge Scaling Shots using HE quantities not possible at LLNL Site 300. Experiments will provide data for potential Advanced Hydrodynamic Facility.		
	Subtotal, Experimental Support $ 43,385	Subtotal, Experimental Support $ 24,660	Subtotal, Experimental Support $ 21,595
	TOTAL, TESTING CAPABILITIES & READINESS $ 253,927	TOTAL, TESTING CAPABILITIES & READINESS $ 184,660	TOTAL, TESTING CAPABILITIES & READINESS $ 182,225
	TOTAL, CORE STOCKPILE STEWARDSHIP OPERATING EXPENSES $1,020,315	TOTAL, CORE STOCKPILE STEWARSHIP OPERATING EXPENSES $ 892,824	TOTAL, CORE STOCKPILE STEWARDSHIP OPERATING EXPENSES $ 948,548

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
2. Capital Equipment			
d. Basic Equipment	Basic equipment funding provides for priority capital equipment needs necessary to maintain the capabilities necessary for stockpile maintenance, safety activities, and laboratory site infrastructure. No major items of equipment were purchased in FY 1994. $ 32,895	Basic equipment funding provides for priority capital equipment needs necessary to maintain the capabilities necessary for stockpile maintenance, safety activities, and laboratory site infrastructure. No major items of equipment were purchased in FY 1995. $ 28,820	Basic equipment funding provides for priority stockpile stewardship capital equipment needs necessary to maintain the capabilities necessary for stockpile maintenance, safety activities, and laboratory site infrastructure. Funding is restored to levels commensurate with program requirements following several years of reduced requests. The requests were reduced in order to bring down the backlog of procurements that was creating large end of year uncosted balances of capital equipment funding. No major items of equipment are expected to be purchased in FY 1996. $ 39,355
e. Computers	Provided the following items of computer equipment in FY 1994: - High Speed Communications, Phase I, LLNL ($6,000) - Supercomputer, LANL ($10,100) - Mass Storage Upgrade, LANL ($2,100) - Network Upgrade, LANL ($2,400) $ 20,600	Will provide the following items of computer equipment in FY 1995: - High Speed Communications, LLNL ($2,000) - Supercomputer, LANL ($10,000) - Mass Storage Upgrade, LANL ($2,500) - Network Upgrade, LANL ($2,000) - Supercomputer Upgrade, SNL ($3,000) - Network Upgrade, SNL ($3,500) $ 23,000	Will provide the following items of computer equipment in FY 1996: - Numerical Test Facility, LLNL ($8,000) - Object Data Archive, I, LLNL ($2,000) - Supercomputer, LANL ($10,000) $ 20,000

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
2. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
f. Testing Capabilities and Readiness	Funding was directed to providing more state-of-the-art digital, fiber-optic, and electro-optical sensor and other electronic equipment needed to reduce the labor needed to conduct each experiment and to maximize the beneficial information retrieved from each experiment. Other capital equipment includeds various types of environmental monitoring equipment in and around the test site.	Funding will maintain the environmental, physical, and technical infrastructure of the Nevada Test Site as well as support laboratory experimental activities at the Nevada Test Site.	Funding will maintain the environmental, physical, and technical infrastructure of the Nevada Test Site as well as support laboratory experimental activities at the Nevada Test Site.
	$ 18,900	$ 15,000	$ 8,000
Subtotal, 2. Capital Equipment	$ 72,395	$ 66,820	$ 67,355

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
A. Core Stockpile Stewardship			
3. Construction			
g. GPD-101, General Plant Projects, VL	$ 16,500	$ 8,500	$ 12,500
h. 98-D-105, Contained Firing Facility Addition, LLNL	$ 0	$ 0	$ 6,600
i. 98-D-104, Processing and Environmental Tech Lab, SNL	$ 0	$ 0	$ 1,800
j. 98-D-103, Atlas, LANL	$ 0	$ 0	$ 8,400
k. 96-D-102, Stockpile Stewardship Fac. Revit, Phase VI, VL	$ 0	$ 0	$ 2,520
l. 95-D-102, CMR Upgrades Project, LANL	$ 10,250	$ 3,300	$ 9,940
m. 94-D-102, Nuclear Weapon RD&T Fac. Revit, Phase V, VL	$ 4,000	$ 13,000	$ 12,200
n. 93-D-102, Nevada Support Facility, NV	$ 4,000	$ 17,000	$ 15,650
o. 92-D-102, Nuclear Weapon RD&T Fac. Revit, Phase IV, VL	$ 27,479	$ 17,449	$ 0

III. Weapons Stockpile Stewardship (Cont'd):
A. Core Stockpile Stewardship (Cont'd):
3. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
p. 90-D-102, Nuclear Weapon RD&T Fac. Revit, Phase III, VL	$ 20,555	$ 4,900	$ 6,200
q. 88-D-106, Nuclear Weapons RD&T Fac. Revit, Phase II, VL	$ 39,624	$ 20,980	$ 17,995
Subtotal, 3. Construction	$ 122,408	$ 85,129	$ 93,805

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship B. Inertial Confinement Fusion 1. Operating Expenses			
Introduction	The Inertial Confinement Fusion program directed its efforts toward the demonstration of ignition and gain in the laboratory by the year 2002 in accordance with the recommendations of the National Academy of Sciences (NAS). Major accomplishments included: - Completing a major portion of the NOVA Technical Contract. - Completing a multi-laboratory Conceptual Design of the National Ignition Facility (NIF), the proposed aboveground experimental ICF facility. - Completing a major portion of the upgrade to the OMEGA laser.	The Inertial Confinement Fusion (ICF) program is a research and advanced technology development program recognized for its potential for producing the successful demonstration of a thermonuclear ignition and burn (moderate gain) in a laboratory environment. The principal strategy for attaining ignition is the development of the x-ray-driven, indirect drive approach, utilizing a glass laser to demonstrate ignition. Other driver technologies pursued are the krypton fluoride (KrF) lasers and light ion accelerators. -As an integral part of the Stockpile Stewardship program, ICF contributes to the weapons physics and weapons effects studies of direct relevance to science-based stockpile stewardship of nuclear weapons and to the weapons effects simulation program of the Department of Defense. - As a secondary objective, and as specified by the National Energy Strategy, ICF provides the necessary research base for application to longer-term fusion energy development and basic research and development in high energy plasma physics. - Planning for the National Ignition Facility (NIF) will continue, including advanced conceptual design, NEPA	The programmatic emphasis and near-term technical objectives of the ICF program have been altered as a result of the moratorium on underground nuclear testing. In FY 1996, the ICF program will be more fully integrated into the evolving science-based stockpile stewardship program of the National Security Strategic Plan. The FY 1996 request for the ICF program continues the science and technology base program and includes funding for the National Ignition Facility.

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
1. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Introduction (Cont'd)		documentation, and support for site selection. The Department will conduct public workshops to address stakeholder concerns about the NIF regarding nonproliferation, scientific and international collaborations, contributions to stockpile stewardship, and local issues.	
Indirect Drive	INDIRECT DRIVE WITH GLASS LASER The NOVA glass laser is the primary facility used to investigate the x-ray driven, indirect drive approach with LLNL and LANL sharing the facility. - Continued target physics experiments on NOVA to investigate hydrodynamically equivalent implosion physics (HEP) and hohlraum-laser plasma interaction physics (HLP) under conditions approaching those of proposed ignition targets. These experiments included measuring capsule yield degradation as a function of initial surface finish perturbations and using Precision NOVA to produce a radial convergence ratio of the capsule of up to 24 with little yield degradation. Investigated other aspects of proposed NIF target designs including low-density gas fill in the hohlraum as a means of decreasing plasma filling and preserving symmetry. - Continued NOVA experiments to obtain basic atomic physics, radiation, equation of state, and hydrodynamics	INDIRECT DRIVE WITH GLASS LASER The goal of the Indirect Drive with Glass Laser is to resolve the remaining target physics issues for indirect drive implosions with glass lasers. In FY 1995, the principal objective will be to validate the computational modeling of NIF target designs. The NOVA Technical Contract will also be completed. - The NOVA glass laser is the primary facility used to investigate the x-ray driven, indirect-drive approach with LLNL and LANL scientists sharing the facility. - Continue to operate the NOVA laser, focusing on increasing the certainty of the design basis of NIF targets based on the National Academy of Science (NAS) review of the ICF program. - Continue target physics experiments to investigate the areas of hydrodynamically equivalent physics (HEP) and hohlraum-laser interaction physics (HLP).	INDIRECT DRIVE WITH GLASS LASER Supports an appropriate laser technology and optics manufacturing development program while providing an accelerated target physics effort. - Pursue Beamlet in support of glass laser technology development. - Continue to work toward optimization of system performance. - Test engineering prototypes as appropriate, including beam-smoothing technologies as determined by development work on NOVA and OMEGA Upgrade. - Conduct ignition design optimization studies and weapons physics experiments on NOVA.

Program Activity	FY 1994	FY 1995	FY 1996
Indirect Drive (Cont'd)	data applicable to the accurate computational design of nuclear weapons. - Completed Precision NOVA Project, reduced to a routine activity with approximately 30 percent of the NOVA ICF shots having precision operation. - Reconfigured one beam of the NOVA laser to resemble the beam focusing and smoothing geometry of NIF. - As a result of continuing work on the Petawatt Project to investigate advanced ICF concepts and fundamental target physics at ultra-high irradiance, developed a new frontend (oscillator and pulse conditioning system) for NOVA which can produce the required temporarily chirped and shaped input pulse. Developed a new diffraction grating in cooperation with Hughes Electro-Optics Corp., which received an R&D 100 award. - ICF Target Design and Theory Group - Designed long-scalelength, NIF-relevant, plasmas in both open geometries (gas bags) and closed geometries (gas filled hohlraums). Designed spectroscopic methods to diagnose the temperatures and densities of these plasmas. Developed a three-dimensional plasma code, F3D/SBS, that calculates the complex interplay between filamentation instability and stimulated Brillouin scattering (SBS) to support explanation of NOVA observations. Calculated, using fully integrated (hohlraum plus capsule) two-dimensional LASNEX simulations, 3 separate NIF target designs, each yielding over 10 megajoules of yield,	- Continue campaign on NOVA using gas-filled hohlraums to gain a better understanding of issues for NIF with respect to symmetry and laser-plasma instabilities. - Begin initial trial runs of new 3-dimensional ICF hydro code. - Continue experimentation on NOVA including full aperture backscatter sampler and neutron burn diagnostic. - Conduct 1,000 shots on Trident for development and staging and for fundamental ICF science. - Conduct a thorough hydrodynamic instability campaign utilizing planar slabs, cylindrical implosions, and perturbed capsules. - Complete full design and sensitivity studies for NIF ignition targets, including targets with CH and Be ablators. - Complete second phase of LASNEX code quality assurance effort while continuing physics package enhancements. - Continue fundamental theoretical studies in plasma and atomic physics to improve understanding of ICF target physics and numerical techniques. - Demonstrate synthetic polishing scaling to NIF optics. - Complete a fully integrated third harmonic conversion analysis for NIF (KD*P) crystals.	

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
1. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Indirect Drive (Cont'd)	close to ideal one-dimensional performance. Developed new methods of diagnosing time-dependent symmetry using x-ray backlit low density foam balls. - Completed final construction of Beamlet. Conducted tests to verify the performance of Beamlet's novel design and demonstrated multi-pass architecture and performance of an advanced glass laser such as proposed for the NIF. Successfully demonstrated the 1w performance at the 3 nanosecond design point of the laser. - Achieved excellent beam quality on Beamlet in terms of low peak-to-average fluence modulation (<1.2/1) and small wavefront aberration, the latter leading to a beam spot-size only a few times the diffraction limit. - Demonstrated conversion on Beamlet of the 1w output beam to the third harmonic to meet the efficiency and fluence requirements of the NIF (i.e., achieved 5 kilojoule milestone). - Conducted x-ray drive symmetry studies on NOVA using two diagnostic techniques, and began a symmetry campaign on gas-filled hohlraums. - Conducted laser-plasma instability campaign on NOVA using gas-filled hohlraums, allowing an optimistic extrapolation to NIF hohlraums. - Conducted extensive NIF target-design studies with integrated modeling that predict ignition with the NIF laser. - Designed and/or tested a number of	- Continue operation of the Beamlet laser and other experimental and theoretical activities designed to enhance glass laser technology.	

Program Activity	FY 1994	FY 1995	FY 1996
Indirect Drive (Cont'd)	sophisticated diagnostics for NOVA. - Conducted 1,000 shots on the Trident laser for diagnostic development and staging, and for fundamental ICF science studies. - Completed the initial phase of quality assurance procedures for the LASNEX computer code while implementing further physics enhancements. - Continued fundamental theoretical studies of plasma and atomic physics, increasing understanding of hohlraum physics, including interpenetrating plasmas, which were modeled with the ISIS computer code.		
	$ 94,977	$ 93,400	$ 102,462
Direct Drive	DIRECT DRIVE WITH GLASS LASER - Continued the OMEGA upgrade project ahead of planned schedule. - Investigated targets similar to ignition targets (but scaled down in terms of energy) with direct drive, spherical illumination.	DIRECT DRIVE WITH GLASS LASER The principal role of the Laboratory for Laser Energetics of the University of Rochester is to validate the feasibility of the direct-drive approach to ICF which can potentially provide higher gain at a smaller driver energy than the indirect drive approach. - Complete the OMEGA Upgrade Project and begin operation. The upgraded OMEGA laser facility will allow experiments to study the effects of hydrodynamic instability and drive symmetry on ignition scaling through	DIRECT DRIVE WITH GLASS LASER Supports the first full-year of operation of the upgraded OMEGA laser. - Conduct experiments on beam-to-beam energy balance, laser temporal pulse shaping and plasma physics experiments to include: measurements of laser energy absorption fraction, x-ray conversion efficiency and mass ablation rate; capsule implosion experiments; and long-scale-length plasma generation and characterization.

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
1. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Direct Drive (Cont'd)		improvement of the illumination uniformity, development of individual beam-smoothing techniques, and understanding and improving power balance in multibeam laser systems. This validation of the performance of direct drive targets supports the success of the NIF program.	
	$ 15,753	$ 18,265	$ 18,200
KrF Laser	KrF LASER - Completed construction of the NIKE laser with operation expected in early FY 1995. - Continued development of KrF gas laser science and technology. - Continued both computational and theoretical studies of laser-target coupling and hydrodynamics associated with laser matter experimentation. (NRL $7,765) - Began orderly 18-month closeout of the Mercury KrF facility at LANL consistent with DOE regulations.	KrF LASER The krypton fluoride (KrF) laser is an alternate short wavelength laser technology with potential advantages in the area of uniformity and efficiency. The KrF activity is all performed on the NIKE laser at the Naval Research Laboratory (NRL). The primary objective is to investigate the viability of KrF lasers for ICF. - Begin flat plane laser target experiments to study the remaining physics uncertainties in the direct drive concept. - Demonstrate a drive fluence and ablation pressure nonuniformity of less than 1 percent rms in a 4 nanosecond pulse, using both direct laser measurements and an accelerating foil. (NRL $8,050) - Complete orderly closeout of the Mercury KrF facility at LANL consistent	KrF LASER Supports NIKE activities at the Naval Research Laboratory (NRL) to demonstrate the feasibility of using direct drive pellets for an ignition or high gain facility. - Continue to study basic hydrodynamic instabilities (Rayleigh-Taylor and Richtmeyer-Meshkov) that can occur in ICF capsules. - Continue to evaluate methods of controlling the ablative Rayleigh-Taylor instability, such as x-ray preheating, shock preheating and dynamic stabilization. (NRL $8,000)

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
1. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
KrF Laser (Cont'd)		with DOE regulations.	
	$ 9,565	$ 8,050	$ 8,000
Light Ion Beams	LIGHT ION BEAMS - Performed experiments to measure parasitic load and determine its cause. It was found to be due to ion currents generated from surface contamination. Heating and cleaning were identified as parasitic load mitigation techniques and cleaning protocols were developed. Parasitic currents were decreased by a factor of two on SABRE. Additional experiments to study parasitic load were performed on SABRE at Sandia, LION at Cornell, and Gamble II at Naval Research Laboratory. After applying diode cleaning techniques to SABRE, diode performance was greatly improved. New PBFA II diode and center section hardware was designed for reheating, cleaning and gettering to mitigate parasitic load. - Developed a new electromagnetic (EM) particle in cell (PIC) simulation capability. It includes neutral ionization physics and uses IVORY to model the divergence and beam collapse due to parasitic loads. - Developed a three-dimensional analytic theory of ion beam divergence. - Improved understanding of gas	LIGHT ION BEAMS Light ion beam experiments are currently being conducted on the PBFA-II pulsed power accelerator. The near-term objective of the light ion approach is to obtain the beam focal intensities necessary to study light ion beam driver target physics. Beam focal intensity can be increased by reducing the beam divergence and/or increasing the coupled power. - Conduct a performance review of the light ion program by the ICF Advisory Committee. - Demonstrate a further increase in coupled ion power and a further decrease in ion beam divergence by mitigating the parasitic load. - Achieve a 100 electon volt radiation temperature in a hohlraum by focusing an increased brightness lithium beam to an intensity greater than 5 terawatts per square centimeter . - Conduct target experiments on PBFA II at increasing power intensities to establish temperature scaling with power intensity. - Perform Internal Pulse Shaping	LIGHT ION BEAMS Supports continued efforts to model and measure lithium beam transport physics. - Confirm ion energy deposition predictions and scaling to the higher beam intensities, specific deposition rates and material temperatures that are required for ignition and gain capsules. - Begin to measure the efficiency of coupling radiation from foam-filled hohlraums into hydrodynamic motion. - Perform PBFA-II and NOVA experiments to extend the measurements of Rayleigh-Taylor growth factors that have been made using laser-driven hohlraums in order to include the effect of the foam transport region. - Evaluate the internal pulse shaping (IPS) concept in a series of collaborative SNL/LLNL IPS proof-of-principle experiments using the NOVA and PBFA-II.

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
1. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Light Ion Beams (Cont'd)	breakdown for transport through IPROP simulations and GAMBLE II experiments. - Conducted the first two-stage diode experiments on PBFA II to demonstrate acceleration in the second gap. - Improved the shot rate to one per day and demonstrated reliability greater than 95 percent on SABRE. - Continued analysis and simulation that showed self-pinched transport such as LMF, ETF, LIBRA-S and Common-Ion Driver.	Experiments on NOVA. - Continue gas breakdown experiments, initiate instability analysis experiments, design self-pinched transport and solenoidal focusing experiments, develop and test a high efficiency two-stage diode on PBFA II. - Perform NIF target design calculations.	
	$ 25,221	$ 25,500	$ 26,781
Capsule Fabrication & Development	CAPSULE FABRICATION AND DEVELOPMENT - Fabricated over 160 complex, specialized targets and capsules for NOVA, including gas-filled hohlraums for laser-plasma instability experiments, and over 900 targets for Trident. - Continued development of cryogenic fuel layers and demonstrated surface roughnesses below 2 micrometers. - Fielded target experiments on PBFA II and achieved a hohlraum temperature of 63 electron volts for 30 nanoseconds.	CAPSULE FABRICATION AND DEVELOPMENT The capsule and target fabrication program provides a variety of complex, well-characterized targets and capsules which must meet stringent specifications to support ICF experiments. These activities are conducted by LANL and General Atomics. - Fabricate 150 sophisticated, specialized targets for NOVA and 1,000 targets for Trident. - Continue development of cryogenic fuel layers with smoother surfaces for NIF. - Develop joining and smoothing techniques for NIF beryllium capsule fabrication. - Develop hohlraum characterization and total neutron yield for NIF and	CAPSULE FABRICATION AND DEVELOPMENT Supports fabrication of targets and capsules for NOVA and Trident. - Develop advanced fabrication techniques for NIF target manufacture including cryogenic fuel formation and beryllium shell manufacture.

Program Activity	FY 1994	FY 1995	FY 1996
Capsule Fabrication & Development (Cont'd)		prototype these on NOVA and SATURN.	
	$ 14,117	$ 13,100	$ 13,523
National Ignition Facility	NATIONAL IGNITION FACILITY - Completed the multi-laboratory Conceptual Design Report (CDR) which was validated by an Independent Cost Estimating (ICE) team.	NATIONAL IGNITION FACILITY The National Ignition Facility (NIF) is a laser driven experimental facility intended to produce ignition and modest energy gain in inertial confinement fusion targets in support of national security and civilian objectives. - Conduct public workshops to address stakeholders concerns about the NIF as related to nonproliferation, scientific and international collaborations, contributions to stockpile stewardship, and local issues. - As a consequence of Key Decision 1, initiate Advanced CDR, NEPA documentation, and Preliminary Safety Analysis Report. Specifically, the following activities to prepare for the Title I design of NIF will be supported: - Generate the detailed quality assurance plan additions to the NIF Quality Assurance Project Plan used in FY 1994. - Prepare a comprehensive Environment, Safety and Health Plan. - Prepare a Fire Hazards Analysis to	NATIONAL IGNITION FACILITY The National Ignition Facility will comprise the world's most powerful laser - delivering more than 50 times the energy and 10 times the power of NOVA - to ignite and burn ICF targets. The NIF will partially compensate for the loss of underground nuclear testing and will provide above ground simulation capability for nuclear weapons effects, nuclear weapon-related physics data, particularly in the area of secondary design. It will also contribute to inertial fusion energy development and research in high energy density science. - Continue Advanced CDR activities initiated in FY 1995. - Continue the EIS initiated in FY 1995. - Conduct advanced manufacturing activities relevant to the NIF project and other research and development. Manufacturing development activities include capability to maintain the NIF optical components in accordance with the required vendor spaces.

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
i. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
National Ignition Facility (Cont'd)		meet the requirements of DOE orders. - Prepare the non-site-specific section of the Preliminary Safety Analysis Report. - Begin to prepare an Environmental Impact Statement (EIS) for NIF. - Initiate Advanced Conceptual Design activities including: preparation of Title I management systems; evaluation of options not considered during the Conceptual Design; support for DOE site selection; selection of an Architect/Engineering firm; systems engineering; refining of NIF criteria; and project management and budget documentation.	
	$ 6,000	$ 6,000	$ 23,600
Other	OTHER - Conducted three Inertial Confinement Fusion Advisory Committee (ICFAC) meetings. The ICFAC produced several major recommendations including a recommendation to approve Key Decision 1 (Approval of New Start) for the National Ignition Facility. - Supported contract staff for technical/professional assistance at DOE Headquarters. - Supported ICF research and development at universities.	OTHER The ICFAC will continue to provide advice and guidance to the Assistant Secretary for Defense Programs on both technical and management aspects of the ICF program and will continue to follow the development of the NIF through advanced conceptual design and Title I design. The ICFAC consists of approximately 15 members having expertise in weapons applications, plasma and target physics, particle beams, lasers, and systems engineering.	OTHER - Continues support for Inertial Confinement Fusion Advisory Committee. - Continues funding for the National Laser Users Facility. - Continues support for contract staff and university research and development.

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):
1. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other (Cont'd)		- Reinstates the National Laser Users Facility program. This is the first year of using the upgraded OMEGA laser at the University of Rochester. The National Laser Users Facility program allows researchers outside the University of Rochester to use the upgraded OMEGA laser by selecting the most meritorious proposals for funding grants. - Supports ICF research and development in universities and other facilities.	
	$ 3,572	$ 2,440	$ 2,783
Subtotal, 1. Operating Expenses	$ 169,205	$ 166,755	$ 195,349
2. Capital Equipment	- Supported ongoing laboratory programs. - Provided requested funding to support the OMEGA Upgrade project at the University of Rochester. ($9,450) - Supported the capital equipment needs of the Naval Research Laboratory (NRL). ($450)	- Provides needed research and development hardware to ensure continued operation of ongoing laboratory projects. - Provides requested funding for completion of the OMEGA Upgrade. ($2,500) - Provides funding for the capital equipment needs of the NRL. ($700)	- Provides needed research and development hardware to ensure continued operation of ongoing laboratory projects. - Provides requested funding for capital equipment needs for OMEGA laser at the University of Rochester. ($1,900) - Provides funding for the capital equipment needs of the NRL. ($500)
	$ 15,860	$ 9,718	$ 7,918

III. Weapons Stockpile Stewardship (Cont'd):
B. Inertial Confinement Fusion (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
3. Construction			
96-D-111, National Ignition Facility	$ 0	$ 0	$ 37,400
Subtotal, 3. Construction	$ 0	$ 0	$ 37,400
Subtotal, B. Inertial Confinement Fusion	$ 185,065	$ 176,473	$ 240,867

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
C. Technology Transfer and Education			
1. Operating Expense			
a. Technology Transfer	Increased commitment to more major industrial programs for added leverage to impact U.S. competitiveness and improve the strategic technology thrust areas such as microelectronics, advanced materials, high-speed computing, transportation, lithography, advanced manufacturing, and health care technology. Increased involvement of the weapons production plants in the technology transfer mission. Continued a program to provide technical assistance to the machine tool industry to enhance their research and development efforts and technical capabilities. The weapons laboratories, in partnership with industry, continued the development of advanced flat panel display technology that will outpace foreign competitive position in the international flat panel display market. Projects addressed field emission, plasma, advanced phosphor and electroluminescent materials, and manufacturing processes. The weapons laboratories, in partnership with industry and in coordination with the Advanced Research Projects Agency (ARPA) and the National Institute of Science and Technology (NIST), continued activities in microelectronics. Activities included	Funds will continue previously approved projects, thus honoring commitments with industry and permitting the laboratories to complete planned research and development objectives. The budget will also support Presidential and Secretarial commitments such as the National Information Infrasturcture, the Advanced Computational Technology Initiative of the Domestic Oil and Gas Industry, the American Textile Partnership (AMTEX), New Generation Vehicle, and Semiconductor Modeling Center. Funds will be increasingly focused in programs which will have a significant impact on the competencies of the weapons complex and on the national economy. Funds will be allocated between laboratory/facility partnerships and major partnerships. Laboratory/facility partnership funds will be used by the laboratory/facility in cooperative agreements in technology focus areas that are critical to the maintenance of the weapons technology base and are important to U.S. international industrial competitiveness. Each laboratory and facility will have a Defense Programs approved laboratory/facility partnership plan. Each plan will identify the strategic thrusts the	Continuing at approximately the FY 1995 level of effort, the technology transfer program will finance both ongoing and new cooperative work with the private sector, with emphasis on dual-benefit projects which support the core competencies at the weapons laboratories. The FY 1996 request also supports two Presidential commitments, the National Information Infrastructure and the New Generation Vehicle Initiative, as well as the Secretary's commitments to the High Performance Computing Initiative, AMTEX, the Semiconductor Modeling Center and the Healthcare Industries Initiative. As in other projects, the focus on these initiatives by Defense Programs is directed to activities which provide dual-benefits in support of the weapons mission. Specifically, it is intended that most technology transfer programs provide support to the research and development needs of the "Factory of the Future" and the Advanced Strategic Computing Initiative, both of which are fundamental to a lean, flexible, environmentally conscious and cost effective weapons complex that maintains its safety and reliability. $14.9 million of the requested funds will be used for new projects within the New Generation Vehicle Initiative. The new projects will address two areas: Low Emissions-Engine Support

III. Weapons Stockpile Stewardship (Cont'd):
C. Technology Transfer and Education (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Technology Transfer (Cont'd)	work with industry in small feature size integrated circuit fabrication processes and materials, contamination-free manufacturing, modeling of semiconductor physics and manufacturing methods, high density interconnections, and opto-electronics technology. One program, Sandia's Electronics Quality/Reliability Center, partnered with numerous manufacturing firms to increase mechanical, software and electronics reliability for integrated circuit processes. The weapons laboratories, in partnership with industry, continued the development of advanced lithography technology that will leapfrog foreign competition to help the U.S. recapture the integrated circuit production market. The emphasis was on extreme ultraviolet project lithography. LLNL designed a pre-prototype deposition tool for virtually "defect-free" depositions and demonstrated a mask pattern repair process. The weapons laboratories in partnership with the domestic gas and oil industry worked to develop information technologies critical to the National Information Infrastructure. The technologies being developed will be useful to other industrial sectors such as health care, manufacturing, and financial services. Work proceeded in networking, data security, visualization, mass data storage, computer input/output, distributed computing and collaborative tools technologies. The laboratories helped develop an information system to help independent oil and gas producers utilize laboratory skills in 2-D	laboratory/facility will pursue within its technology focus areas and will have specific milestones. Major partnership funds will support 10 large dual-benefit programs with high value to the weapons complex and significant U.S. economic impact. These are multiyear-funded programs, the objectives of which are provided in the FY 1996 column. The major partnership programs are: - Flat Panel Display Initiative - Health Care Initiative - High Performance Computing Program - Partnership for the New Generation Vehicles - National Information Infrastructure - Integrated Circuit Manufacturing Program - Agile Manufacturing Program - Machine Tool Program - Aircraft Engine Advanced Materials Program - American Textile Partnership (AMTEX) The successful Small Business Initiative will be continued.	Systems Technologies and On-board Energy Storage. Major partnership funds will support 10 large dual-benefit programs with high value to the weapons complex and significant U.S. economic impact. These are multiyear funded programs. The objectives for each program follow and are provided to highlight the general direction of each program. - The Flat Panel Display Initiative, a part of the National Flat Panel Display Program, is intended to help U.S. industry capture 15% of the world flat panel display market by the year 2000 while simultaneously maintaining and enhancing the Department's nuclear weapons competencies. - The objective of the Health Care Initiative is to develop technological advances that will significantly impact cost-effective health care delivery, and provide improvements to our laboratories' core competencies in the fields of lasers, sensors, imaging and pattern recognition. - The High Performance Computing program strives to enhance, apply, and transfer the National laboratories' strong computational capabilities to the private sector, while improving modeling and computing capabilities at the laboratories through interfaces with the industrial environment. For example, the Advanced Computational Technology Initiative is helping to improve the competitiveness of the domestic natural gas and oil industry and to decrease dependence on foreign oil through the application of advanced

Program Activity	FY 1994	FY 1995	FY 1996
a. Technology Transfer (Cont'd)	seismic interpretation. The weapons laboratories continued to work collaboratively with the automobile industry on numerous technologies including development of lightweight materials and emissions reductions. Specifically, Sandia developed a computer algorithm that automatically generates a 3-D mesh for use by various analysis codes, including structural deformation and heat transfer codes. This work resulted in an R&D 100 Award. Initiated work on collaborative projects with the aerospace industry in modeling and development of process control systems for metal forming, joining, heat-treating, and manufacturing. Continued funding of the Defense Programs Small Business initiative. Over 100 new partnerships were executed and over 110 technical assistance activities were conducted.		modeling and data transfer techniques. - Working with U.S. automobile manufacturers, the Partnership for the New Generation Vehicles seeks to improve competitiveness in the U.S. and world marketplace, focusing on advanced manufacturing; near-term efficiency, safety, and emissions improvements; and triple fuel efficiency. - The mission of the National Information Infrastructure is to apply information technology to reduce cost, share information, and promote innovation within a global environment to support energy and defense applications. - The objective of the Integrated Circuit Manufacturing Program is to help U.S. industry improve its competitiveness in the semiconductor industry while simultaneously maintaining and enhancing the nuclear weapons competencies of the National laboratories. - The Agile Manufacturing program will enhance National industrial competitiveness by advancing and deploying manufacturing technologies that promote agility. These capabilities are also fundamental to the future of the weapons complex. - The Machine Tool Program seeks to improve the competitiveness of the U.S. machine tool industry through the development of advanced technologies necessary to significantly reduce the cost of machining and the certification of structural ceramics for industrial applications. An improved machine tool

III. Weapons Stockpile Stewardship (Cont'd):
C. Technology Transfer and Education (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
a. Technology Transfer (Cont'd)			industry is vital to the Defense Programs mission. - The Aircraft Engine Advanced Materials program is assisting the U.S. aircraft engine manufacturers to develop advanced materials, welding and joining capabilities, protective coatings, and process and design validation techniques that will greatly improve the performance of new aircraft engines, while enhancing critical laboratory skills. - The American Textile Partnership (AMTEX) is pursuing collaborative research and development activities aimed at improving the competitiveness of the U.S. textiles industry from fiber through finished products. The Defense Programs portion of this collaboration includes mission-related work on sensors, data transmission and security. Continue to support the Laboratory/ Facility Partnership Plans, which are being redirected to current laboratory mission thrusts.
	$ 212,733	$ 209,794	$ 225,405

III. Weapons Stockpile Stewardship (Cont'd):
C. Technology Transfer and Education (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Education	The education program supports cross-cutting science education activities throughout the Defense Programs (DP) laboratories and Nevada Operations Office ranging from kindergarten to graduate school; including research support, teacher programs, and support to Historically Black Colleges and Universities (HBCU). DP has traditionally funded HBCU and other minority institutions at a level of $1.7 million. In FY 1994 the amount was increased to $3.1 million, an increase of over 80 percent. The following are FY 1994 accomplishments in the education program: - The Los Alamos National Laboratory supported the statewide systemic initiative and coordinated many of the education projects with the initiative; conducted a successful experiment related to the solar eclipse involving over 2,000 middle school students and teachers in the science process; launched a new project where teams of high school students discuss a critical issue facing the nation and propose solutions (Russian students visited); conducted the largest ever New Mexico Supercomputing Challenge (52 schools participated); made significant progress and breakthroughs in the development of an audio-driven computer display of vocal tract components that will improve teaching of hearing impaired students to speak; developed a series of Federal Coordinating Council for Science, Engineering, and Technology Teacher Workshops; Teacher Opportunities to Promote Science was identified by DOE as one of its model programs and LANL was asked to develop	To meet the education program's goal "to strengthen our nation's economic position, and enhance national security, by applying the unique resources of our national laboratories and facilities to improve understanding of science, mathematics, engineering, and technology," the following are milestones for FY 1995: - Continue to provide support to Historically Black Colleges and Universities and other minority institutions. - The Los Alamos National Laboratory will continue the science education projects that are now being conducted, plus: pilot-test the Teaching Hearing Impaired system at the New Mexico School for the Deaf; provide consultation for school districts with regard to the use of new technology in education, in particular computer networking and distance learning; develop a collaborative Russian-American student exchange project with the Lawrence Livermore National Laboratory and the Oak Ridge Institute of Science and Education; establish an internet on-line database of educational information from the laboratory; conduct an electronic field trip at the laboratory with Cable News Network; and conduct a full field test of the Science-at-Home curriculum. All programs in FY 1994 were evaluated and the evaluations will be used to determine continuation or appropriate modification. - The Nevada Operations Office will continue to provide support to	Defense Programs will continue to fund science education programs at the FY 1995 level of $20 million through its laboratories; Lawrence Livermore National Laboratory, Los Alamos National Laboratory and Sandia National Laboratories as well as the Nevada Operations Office. The laboratories and Nevada are engaged in a broad range of science and mathematics, engineering, and technology education programs to ensure a highly trained, diverse, scientific workforce, and a scientifically and technically literate citizenry. Collaborative programs are encouraged to leverage our unique sources of our national laboratories and facilities to support science and math education through teacher/faculty enhancement, curriculum improvement, systematic change, student support, Historically Black Colleges and Universities and minority institutions. Other efforts such as education technology, public understanding of science and other research opportunities, workshops, and institutes, presentations and demonstrations, and hands-on science, mathematics, engineering, and technology activities are supported as appropriate.

III. Weapons Stockpile Stewardship (Cont'd):
C. Technology Transfer and Education (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Education (Cont'd)	a plan to disseminate the program nationwide (it was also chosen for multiagency evaluation led by the National Science Foundation); completed the networking of one school, began a second school and began planning for a third; published the first issue of Perspectives, a quarterly newsletter for educators; started a new project helping regional two-year colleges and technical/vocational schools develop courses relevant to laboratory needs; started a new project to get more underrepresented minorities and females into science and technology; and completed the first version of Science-at-Home, a curriculum containing a series of science activities for students, teachers, and parents. - The Nevada Operations Office sponsored the third annual DOE Nevada Regional High School Science Bowl (32 teams representing 31 high schools from Nevada, Arizona, and Utah competed); supported first annual Hawaiian Science Bowl; in a special partnership effort with Clark County School supported the JASON Project; provided financial assistance to the 3+2 Dual Degree Program; in the school partnership agreements with Clark and Nye County School Districts 8,500 students, teachers, faculty, and administrators participated in educational outreach activities, tours, lectures, or visits to DOE/NV facilities. The Sandia National Laboratories hosted nine HBCU summer interns, provided four Student Tuition Assistantships, sponsored high school student visits to campuses, and entered into a	successful science education initiatives that are now being conducted, plus: Increase participation of underrepresented populations in DOE/NV science education programs; conduct formative evaluations of the DOE/DP science education programs with focus on how the program is being implemented, what outcomes or accomplishments are attributed to the program and how can the program be improved or should the program be continued. - The Sandia National Laboratory will continue to support HBCUs through summer intern programs, tuition assistance, and job opportunities for PhD candidates; recruit African American summer interns; and sponsor local high school students at HBCU summer precollege programs; continue to improve Science Advisor Program (SCIAD) by increasing number of SCAIDs through the use of more Sandia retirees and use of DOE employees and through increased industry participation. Initiate accreditation for programs at the University of Turabo, provide guidance and assist other communities in developing similar programs, and work with universities to improve the curriculum for student teachers so they have a better understanding of the sciences. Phase out two year science education programs and conduct formative evaluations on all programs. - The Lawrence Livermore National Laboratory will continue to support the ongoing FY 1994 programs. No support in FY 1995 for LESSON, PALS, PETE. New initiative, Student-Tech Transfer Interns, and internship and cooperative	

III. Weapons Stockpile Stewardship (Cont'd):
C. Technology Transfer and Education (Cont'd):
1. Operating Expense (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Education (Cont'd)	partnership with Prairie View A&M University and two local high schools; active and retired employees participated in school systems to improve the quality of engineering and science education through teacher training, program development, and student programs. The funds expended were used to provide technical expertise, equipment loans, and summer research projects for both students and faculty. Doubled Hands-on Minds-on participants; increased the number of our Resource Center check out kits; sponsored/initiated a PhD program at North Carolina A&T University; and the first Bachelor of Science in elementary education candidates graduated from our sponsored program at New Mexico Highlands University. The following programs were supported by the Lawrence Livermore National Laboratory: Fun With Science; LOGO Classes and Team Logo; Regional Competitions; School-to-Work Interns; Access to Science Teaching Careers; National Physical Science Consortium Students; Expanding Your Horizons Consortium; Take Our Daughters to Work; Talking Scientists; Laboratory Technology Resource Center; Science Appreciation; Speakers Bureau; Systemic Workshop; HBCU and Minority Institution Projects; Equipment Loan; Science and Technology; Inquiry Partnerships; LESSON; PALS; Summer Research Internship; Biotechnology Education Project; Global Concerns; Student Science Research Associates; International Science Partners; and Partnerships In Environmental Technology Education (PETE).	opportunities for students working in Laboratory programs which have cooperative agreements with industry (CRADA). Students will also spend time in partner industry. Emphasis on under represented students. - Conduct formative evaluations on all science education initiatives to determine continuation or appropriate modification.	

III. Weapons Stockpile Stewardship (Cont'd):
C. Technology Transfer and Education (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
b. Education (Cont'd)	$ 20,484	$ 20,000	$ 20,000
Subtotal, 1. Operating Expense	$ 233,217	$ 229,794	$ 245,405
2. Capital Equipment	Provided capital equipment specifically for technology transfer projects, such as "Soft X-Ray Lithography, Micro-Thin Lens, Hierarchal High Performance Storage System Testbed, Lightweight Materials for Auto Applications."	Provides capital equipment specifically for technology transfer projects, such as "Microelectronics Quality and Reliability Center, EUV Lithography, Strength and Durability of Continuous Fiber Polymers, Pulsed Plasma Processing of Diesel Engine Exhaust."	Provides capital equipment in support of ongoing and new technology transfer projects.
	$ 5,000	$ 6,000	$ 4,000
Subtotal, C. Technology Transfer and Education	$ 238,217	$ 235,794	$ 249,405

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
D. Marshall Islands and Dose Reconstruction			
1. Operating Expense			
a. Marshall Islands	Continued routine Marshall Islands efforts required in medical surveillance, medical referral, and necessary referral medical care for the aging exposed population. Continued conduct of radiological surveys and characterization of contaminated islands and atolls to meet program mandates. Continued effort to complete baseline uring bioassey and whole-body counting to support resettlement.	Continued routine Marshall Islands efforts required in medical surveillance, medical referral, and necessary referral medical care for the aging exposed population. Continued conduct of radiological surveys and characterization of contaminated islands and atolls to meet program mandates. Continued effort to complete baseline uring bioassey and whole-body counting to support resettlement.	Funding at this level for the Marshall Islands Program will make possible continuing efforts required in medical surveillance, medical referral barring any unexpected increase in referral medical care for the aging population. Island and Atoll radiological characterizations will be conducted on time in scope with planned resettlement decisions. Efforts needed to complete baseline urine bioassey and whole-body counting of the Rongelap, Utirik, Bikini, and Enewetak people to support resettlement will proceed on schedule.
	$ 6,000	$ 6,330	$ 6,330
b. Dose Reconstruction	Continued dose reconstruction activities at NTS through the Office of Epidemiology and Health Surveillance.	Completed research at University of Utah on environmental dosimetry related to the Nevada Test Site activities.	No continuing activities.
	$ 740	$ 200	$ 0
Subtotal, 1. Operating Expense	$ 6,740	$ 6,530	$ 6,330

III. Weapons Stockpile Stewardship (Cont'd):
D. Marshall Islands and Dose Reconstruction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
2. Capital Equipment	Capital equipment funds were needed to purchase small boat, truck, forklift, and generators and maintenance parts associted with DOE environmental monitoring and logistical support efforts in the Marshall Islands. Purchased additional automated calibration systems, urine bioassay equipment, and equipment to upgrade whole body counting systems to support efforts to continue established personal monitoring regimens. Continued upgrade and replacement of gamma spectroscopy detectors, and scientific support and measuring equipment. Purchased forced-drying ovens, a multichannel analyzer and remote meteorological stations to support collections and analyzation of environmental samples. Purchased container trailers suited to laboratory personal berthing, sample refrigeration and whole body counting applications.	Capital equipment funds are needed to purchase two small boats, one brush hog tractor, one 17-foot whaler upgrade, the portable x-ray van, and purchase two generators and maintenance parts associated with DOE environmental, and monitoring dose assessment, and logistical support efforts in the Marshall Islands. Purchase additional automated calibration systems, urine bioassay columns, purchase three germanium detectors, equipment to upgrade the whole body counting systems, upgrade the whole body trailer, purchase four shipping containers to support efforts to continue established personal monitoring regimens. Purchase two replacement of gamma spectroscopy detectors, and scientific support and measuring equipment. Purchase one microwave muffle furnace, two precision forced air ovens, a multichannel analyzer and remote meteorological stations to support collection and analyzation of environmental samples.	Capital equipment funds are needed to purchases two 17-foot whalers, purchase equipment and additional shielding to upgrade the portable x-ray trailer, two replacement generators and maintenance parts associated with DOE environmental monitoring, dose assessment and logistical support in the Marshall Islands. Purchase three germanium detectors, four urine bioassay columns, one track counting microscope, four shipping containers, and upgrade the whole body counting trailer to support personnel monitoring missions. Purchase three gamma spectrometry detectors, air resuspension equipment, one precision forced air ovens, and three multichannel analyzers to support collection and analyzation of environmental samples.
	$ 500	$ 470	$ 470
Subtotal, D. Marshall Islands and Dose Reconstruction	$ 7,240	$ 7,000	$ 6,800

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
E. NIS Industrial Partnering Program			
1. Operating Expense	New Independent States Industrial Partnering Program This program was initiated through the FY 1994 Foreign Operations Appropriations Act. In June, 1994, the Department of State transferred $35 million to the DOE to implement a program of laboratory/industrial partnerships between scientists and engineers in the Newly Independent States of the former Soviet Union and scientists in our 10 national laboratories. The strategic objective of the program is to reduce the threat of proliferation by redirecting NIS weapon scientists and engineers to nonmilitary scientific and commercial R&D activities. Projects selected will enhance nuclear safety and strengthen NIS nuclear material control, accountability and safeguards practices. The 10 laboratories' participation is coordinated by a national Inter-laboratory Board; the United States Industry Coalition is a consortium of U.S. companies who cost share projects with the government to bring NIS technology to the marketplace under a unique agreement with DOE. Most projects supported by FY 1994 funding were initiated by September 1994, and will be completed by October, 1995; 187 project proposals have been	New Independent States Industrial Partnering Program FY 1994 projects are planned to continue through FY 1995. No new FY 1995 funding was requested by the DOE.	New Independent States Industrial Partnering Program The FY 1996 funding request is included in the Office of Arms Control and Nonproliferation.

III. Weapons Stockpile Stewardship (Cont'd):
E. NIS Industrial Partnering Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
1. Operating Expense (Cont'd)	approved by the DOE and Department of State through January 1995.		
	$ 35,000	$ 0	$ 0
Subtotal, E. NIS Industrial Partnering Program	$ 35,000	$ 0	$ 0

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Stockpile Stewardship			
Use of Prior Year Balances	-$ 90,000	-$ 79,725	-$ 21,500

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

STOCKPILE STEWARDSHIP
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Total Prior Year Appropriations	FY 1994 Adjusted Appropriations	FY 1995 Adjusted Appropriation	FY 1996 Request	Unappropriated Balance
GPD-101	General Plant Projects, Various Locations (FY 1994)	$ 16,500	$ 0	$ 16,500	0	0	0
GPD-101	General Plant Projects, Various Locations (FY 1995)	8,500	0	0	8,500	0	0
GPD-101	General Plant Projects, Various Locations (FY 1996)	12,500	0	0	0	12,500	0
96-D-102	Stockpile Stewardship Fac. Revitalization, Phase VI						
	01-Water Well Replacements, LANL	16,800	0	0	0	1,000	15,800
	02-Fire Protection Improvements, LANL	16,900	0	0	0	1,520	15,380
Subtotal, S. Stewardship Fac. Revit., Phase VI		33,700	0	0	0	2,520	31,180
96-D-103	Atlas, LANL	43,300	0	0	0	8,400	34,900
96-D-104	Process & Environmental Tech. Laboratory, SNL	45,900	0	0	0	1,800	44,100
96-D-105	Contained Firing Facility Addition, LLNL	47,900	0	0	0	6,600	41,300
95-D-102	CMR Upgrades Project, LANL	194,750	28,250 a/	10,250	3,300	9,940	143,010
94-D-102	NWRD&T Fac. Revitalization, Phase V						
	01-Power Systems Modernization, SNL	34,300	0	4,000	13,000	12,200	5,100
93-D-102	Nevada Support Facility, NVO	38,650	2,000	4,000	17,000	15,650	0
92-D-102	NWRD&T Facilities Revitalization, Phase IV						
	03-Static Var Compensator, LANL	9,279	2,900	5,779	600	0	0
	04-Infrastructure Modernization, LLNL	13,800	10,500	600	0	0	2,700
	05-Atmospheric Emergency Response Facility, LLNL	11,300	4,000	7,300	0	0	0
	06-Water Distribution Systems, NTS	8,859	3,310	3,700	1,849 b/	0	0
	07-Dormitories, NTS	4,700	2,790	(2,790)	0	0	4,700
	08-Robotics Manufacturing Science & Eng. Lab, SNL	33,000	7,900	10,100	15,000	0	0
	Fully Funded Subprojects	10,200	10,200	2,790 c/	0	0	0
Subtotal, NWRD&T Fac. Revit., Phase IV		91,138	41,600	27,479 c/	17,449 b/	0	7,400
90-D-102	NWRD&T Facilities Revitalization, Phase III						
	01-Main Electrical Service, SNL	5,300	5,300	0	0	0	0
	02-Site 300 Revitalization, LLNL	27,400	17,805	3,395	900	3,400	1,900
	03-Electrical Power Systems Upgrades, LLNL	31,000	22,800	5,400	0	2,800	0
	04-Power Distribution Systems, NTS	11,521	9,400	2,121	0	0	0
	05-Fiber Optic Backbone, LLNL	4,574	1,088	0	0	0	3,486
	06-Technology Support Center, SNL	30,000	17,500	9,639	2,861 d/	0	0
	Use of Prior Year Balances	0	0	0	1,139	0	0
Subtotal, NWRD&T Fac. Revit., Phase III		109,795	73,893	20,555	4,900 d/	6,200	5,386
88-D-106	NWRD&T Facilities Revitalization, Phase II						
	04-Dormitories, NTS	5,689	2,189	0	0	0	3,500
	09-Construction Facility, Area 6, NTS	29,924	27,200	2,724	0	0	0
	10-Dual-Axis Radiographic Hydrotest Facility, LANL	81,400	30,905	17,000	17,000	16,495	0
	11-Defense Programs Research Facility, LLNL	72,640	47,260	19,900	3,980	1,500	0
	Fully Funded Subprojects	200,466	200,466	0	0	0	0
Subtotal, NWRD&T Fac. Revit., Phase II		390,119	308,020	39,624	20,980	17,995	3,500
Total Core Stockpile Stewardship		1,557,052	453,763	122,408	85,129	91,805	315,876
96-D-111	National Ignition Facility, Site TBD	842,600				37,400	805,200
Total Weapons Stockpile Stewardship		1,909,652	453,763	122,408	85,129	131,205	1,121,076

a/ Prior to FY 1995, CMR Upgrades Project was a subproject within NWRD&T Facilities Revitalization, Phase III (90-D-102). $6,250,000 reprogrammed to CMR Upgrades from Special Nuclear Materials Laboratory Replacement Project (88-D-105); Reprogramming 91-R-14.

b/ Reflects application of $4,361,000 of Procurement Reform savings. Total project appropriation prior to application of savings was $21,810,000. Total inc. ides $700,000 of applied prior year balances.

c/ Includes $2,728,000 used to offset requirement for new BA in FY 1995 and $62,000 project contingency reserve.

d/ Does not include application of $1,139,000 additional appropriated use of prior year balances. Project request was $4,900,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPO-101, General Plant Projects
Various Locations

TEC: $12,500
TPC: $12,500

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 12,500	$ 0	$ 12,500	$ 5,000
1997	0	0	0	6,500
1998	0	0	0	1,000

3. Narrative:

This project provides for general plant improvements such as construction or modification of roads, utilities, minor structures, and technical facilities required for the safe, secure, and environmentally sound operation of the weapons research, development and testing facilities. Requirements for small projects of this type (less than $2.0 million) cannot be fully detailed 2 years in advance of the need.

This project covers requirements of the weapons stockpile stewardship facilities at the Los Alamos National Laboratory, the Lawrence Livermore National Laboratory, the Sandia National Laboratory (SNLA and SNLL), and the Nevada Operations Office and its contractors.

Funding for general plant projects is necessary to meet new and changing program developments, to correct operational deficiencies, and for minor utility and road construction.

The requested FY 1996 funding will be used for design and construction of small projects of the types identified in the data sheet.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-102, Nuclear Weapons Stockpile Stewardship Facilities Revitalization, Phase VI, Various Locations

TEC: $ 33,700
TPC: $ 34,660

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1999

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 2,520	$ 0	$ 2,520	$ 2,200
1997	15,250	0	15,250	9,800
1998	9,950	0	9,950	14,960
1999	5,980	0	5,980	6,740

3. Narrative:

This is the seventh project in a phased effort to revitalize the Nuclear Weapons Stockpile Stewardship complex. Prior phases were line item Projects 84-D-107, 85-D-102, 88-D-106, 90-D-102, 92-D-102, and 94-D-102.

The equipment and facilities included in this project are essential to replace or add to existing facilities, to maintain the facilities, and preserve needed capability for nuclear research and development.

The following is a list of FY 1996 subprojects:

1. Water Well Replacements, LANL ($16,800,000)
2. Fire Protection Improvements, LANL ($16,900,000)

The FY 1996 funding will be used to begin engineering and design tasks required for the above subprojects.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-103, ATLAS
Los Alamos National Laboratory, Los Alamos, New Mexico

TEC: $ 43,300
TPC: $ 48,442

Start Date: 1st Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 8,400	$ 0	$ 8,400	$ 8,300
1997	15,100	0	15,100	15,100
1998	13,400	0	13,400	13,500
1999	6,400	0	6,400	6,400

3. Narrative:

This project provides enhanced Los Alamos National Laboratory (LANL) pulsed power experimental capability (technical stewardship of capability in era of test restraints) to support above ground experiments (AGEX) for stockpile stewardship. This project includes the design, procurement, assembly, and installation of the Atlas 20-25 Megampere, 36 Megajoule capacitor bank with associated controls and power supplies in Buildings 124, 125 and 294 at LANL Technical Area (TA) 35. The project will utilize the existing 1,430 MVA generator located in building 301 at LANL.

The scope of work includes:

- o Design, procurement, assembly, and installation of the Atlas 20-25 Megampere, 36 Megajoule capacitor bank with associated controls and power supplies in Buildings 124, 125 and 294 at TA-35.
- o Modification of approximately 6,700 square feet of Building 124 at TA-35 to support Special Facilities (SFE) installation and completion of operational upgrades to the facility.
- o Utilization of existing 1,430 MVA generator in Building 301 at TA-35 for electrical power.
- o Installation of a power storage equipment area of 2,600 square feet in Building 294 and upgrades to the control room are of 1,600 square feet in Building 125 at TA-35; also provides power distribution and diagnostic cabling to experiment in Building 124.
- o Completion of site work and utilities to support the use of up to 3 Government-Furnished diagnostic trailers and installation of new dielectric oil storage tanks adjacent to Building 124 at TA-35.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-104, Processing and Environmental Technology Laboratory (PETL), Sandia National Laboratories (SNL), Albuquerque, New Mexico

TEC: $ 45,900
TPC: $ 48,600

Start Date: 2nd Qtr. FY 1996 Completion Date: 1st Qtr. FY 2001

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 1,800	$ 0	$ 1,800	$ 1,400
1997	19,100	0	19,100	1,800
1998	14,100	0	14,100	18,500
1999	8,600	0	8,600	14,300
2000	2,300	0	2,300	9,300
2001	0	0	0	600

3. Narrative:

The proposed Processing and Environmental Technology Laboratory (PETL) is a new laboratory/office facility to be located on a presently vacant site. The proposed building is a three-story building with a full basement. Each floor is approximately 41,000 square feet, yielding a building of approximately 165,700 gross square feet. An exterior waste holding and neutralization area (approximately 1,730, gross square feet) and a chemical storage area (approximately 1,780 gross square feet) are also included. The Office/Laboratory consists of two primary functional areas, laboratory and office space. The offices are located at the eastern end of the facility, and the laboratory service areas and loading docks are located at the west end. The building is designed to meet the latest ES&H requirements for facilities of this type. Vibration isolation, pedestrian circulation, emergency egress, separation between laboratory and technician work stations, and separate laboratory service corridors which serve as secondary emergency exits are all design responses to identified user requirements. The building will have a modular design to facilitate varying the size of laboratory and office spaces in minimum time and at low costs, as user requirements change. The building is oriented on an east-west axis to achieve maximum opportunity for solar gain along the south elevations.

The focus of PETL is the development, characterization, and application of modern processing to ensure the safety of the environment and personnel, as well as to produce products required for nuclear weapons applications. PETL allows the integration of real-time, on-line diagnostics, test structure in processing lines for "self-identification" of processing problems. The substitution os environmentally safer processing chemicals will be analyzed to minimize design impact and to assess the affect on long-term compatibility. Analytical support of production of non-nuclear components will replace services provided by integrated complex plants, as the manufacturing complex is reduced in size and Manufacturing Development Engineering (MDE) increases.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-105, Contained Firing Facility Addition
Lawrence Livermore National Laboratory
Livermore, California

TEC: $ 47,900
TPC: $ 50,635

Start Date: 1st Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 6,600	$ 0	$ 6,600	$ 5,000
1997	27,100	0	27,100	10,000
1998	8,100	0	8,100	20,000
1999	6,100	0	6,100	12,900

3. Narrative:

This project is a facility of approximately 28,900 SF, consisting of four related structures, for increasingly safe and environmentally compliant firing of explosive charges up to a 60 kg limit of energetic high explosives. This project builds on to the existing B801 firing bunker at the existing firing table site adjacent to B801.

The four structures are a structurally reinforced Firing Chamber, a Support Facility, a Diagnostic Equipment Facility and an Office Module.

The Firing Chamber is designed to contain the effects of cased high explosive materials used in various laboratory experiments. The explosive quantities vary in operational weight up to approximately 60 kg, or an equivalent TNT design weight of approximately 206.3 pounds. The chamber must be protected from shrapnel from explosive casings. All major structural elements are to remain elastic to permit repetitive chamber usage with no structural damage.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-102, CMR Upgrades Project a/
Los Alamos National Laboratory, Los Alamos, New Mexico

TEC: $194,750
TPC: $204,000

Start Date: 1st Qtr. FY 1992 Completion Date: 4th Qtr. FY 2004 b/

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1992	$ 12,000	$ 6,250 c/	$ 18,250	$ 2,757
1993	10,000	0	10,000	5,061
1994	10,250	0	10,250	10,503
1995	3,300	0	3,300	14,642
1996	9,940	0	9,940	13,474
1997	24,480	0	24,480	19,960
1998	21,800	0	21,800	22,236
1999	22,200	0	22,200	22,096
2000	24,100	0	24,100	23,606
2001	27,400	0	27,400	26,542
2002	16,630	0	16,630	21,873
2003	6,400	0	6,400	10,000
2004	0	0	0	2,000

3. Narrative:

The Chemistry and Metallurgy Research (CMR) Building is the largest structure at the Los Alamos National Laboratory (550,000 square feet). Construction of the CMR Building was completed 1952. Most of the major mechanical and electrical equipment has reached the end of its design life.

CMR Upgrades Phase 1 was formerly included under Nuclear Weapons Research, Development and Testing Facilities Revitalization, Phase III (90-D-102) and was combined with CMR Upgrades Phases 2 and 3 as a standalone line item in the FY 1995 budget.

The primary purpose of this project is to upgrade facility systems and infrastructure that has been in continuous operation for 40 years and are near the end of their useful life. Such upgrading will ensure the continued safety of the public and Laboratory employees and increase the operational safety, reliability and security of essential activities. Increased safety, reliability, and security are critical to the continued operation of the Laboratory's Stockpile Stewardship Programs and other national defense programs.

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a/ Prior to FY 1995, CMR Upgrades Phase 1 was a subproject within Nuclear Weapons Research Development and Testing Facilities Revitalization, Phase III (90-D-102). In FY 1995, Phase 1 was segregated and the scope of Phases 2 and 3 were added to create this stand alone line item.

b/ One year project extension required if portions of Phase 3 work is incorporated in LANL sitewide Environmental Impact Statement (EIS).

c/ $6,250,000 was reprogrammed to CMR, Phase 1 subproject of Nuclear Weapons Research, Development and Testing Facilities Revitalization, Phase III (90-D-102) from Special Nuclear Materials Laboratory Replacement Project (88-D-105). Reprogramming 91-R-14 was executed in FY 1992.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-102, Nuclear Weapons Research, Development, and Testing Facilities Revitalization, Phase V, Various Locations

TEC: $ 34,300
TPC: $ 34,600

Start Date: 1st Qtr. FY 1994 Completion Date: 1st Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1994	$ 4,000	$ 0	$ 4,000	$ 419
1995	13,000	0	13,000	8,500
1996	12,200	0	12,200	11,600
1997	5,100	0	5,100	10,000
1998	0	0	0	3,781

3. Narrative:

This is the sixth project in a phased effort to revitalize the stockpile stewardship complex. Prior phases were line item Projects 84-D-107, 85-D-102, 88-D-106, 90-D-102, and 92-D-102.

The equipment and facilities included in this project are essential to replace or add to existing facilities, to maintain the facilities, and preserve needed capability for nuclear research and development.

To date, this project includes the following subproject: Power Systems Modernization, SNL ($34,300,000)

The FY 1996 funding will be used to complete engineering and continue the procurement and construction phases of the power systems modernization project.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-102, Nevada Support Facility
North Las Vegas, Nevada

TEC: $38,650
TPC: $39,900

Start Date: 1st Qtr. FY 1993 Completion Date: 2nd Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1993	$ 2,000	$ 0	$ 1,875	$ 597
1994	4,000	0	4,125	1,164
1995	17,000	0	19,890	6,989
1996	15,650	0	12,760	22,000
1997	0	0	0	7,900

3. Narrative:

This project entails design and construction of a two-story office building (with a partial basement) and associated site improvements. Total floor area of the building will be approximately 164,000 square feet. The complex will be situated on an 11-acre area at the west end of the DOE North Las Vegas Facility (NLVF) in North Las Vegas, Nevada, near the Cheyenne Avenue interchange of Interstate 15 (I-15).

Site improvement work will include utilities (potable water, fire protection water, sanitary sewer, power, communications, and natural gas), grading, pavement, drainage features, area lighting, landscaping, block fences, wire fences, and a parking lot ongrade with a parking deck above.

The building will include office space, a lobby, a cafeteria, meeting rooms, and other typical support areas. Emergency power will be provided for critical functions. The building will also contain various special features, including security systems, an Emergency Operations Center, and vault-type rooms. Special acoustical controls will be provided in critical locations.

While some furnishings and pieces of equipment will merely be moved from existing DOE/NV facilities for use in the new complex, most will be purchased. Existing furniture and equipment will be utilized to the maximum extent possible.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-102, Nuclear Weapons Research, Development, and Testing Facilities Revitalization, Phase III, Various Locations

TEC: $109,795
TPC: $111,645

Start Date: 1st Qtr. FY 1990 Completion Date: 4th Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1990	$ 1,000	$ (15) a/	$ 985	$ 690
1991	9,600	1,088 b/	10,688	1,232
1992	22,100	0	21,992	6,769
1993	40,120	0	40,228	10,676
1994	20,555	0	18,527	18,379
1995	4,900	(1,139) c/	5,789	35,480
1996	6,200	0	6,200	20,323
1997	1,900	0	1,900	11,300
1998	0	0	0	864
1999	3,486	0	3,486	4,082

3. Narrative:

This is the fourth project in a phased effort to revitalize the stockpile stewardship complex beginning in FY 1984. Prior phases were line item Project 84-D-107, Project 85-D-102, and Project 88-D-106.

The equipment and facilities included in this project are essential to replace or add to the existing facilities to maintain the facilities and preserve needed capability for nuclear research and development. The following is a list of subprojects:

1. Main Electrical Service and Switchgear, SNLL ($5,300,000)
2. Site 300 Facilities Revitalization, LLNL ($27,400,000)
3. Electrical Power System Replacement and Upgrade, LLNL ($31,000,000)
4. Power Distribution Systems, NTS ($11,521,000)
5. Fiber Optics Communications Backbone System, LLNL ($4,574,000)
6. Technology Support Center, SNL ($30,000,000)

Former subproject CMR Upgrades ($49,500,000) has been removed and included as part of 95-D-102, CMR Upgrades Project.

The FY 1996 funding will be used to complete engineering on some subprojects, with some subprojects in the procurement and construction phases.

a/ Reflects sequestration of funds for FY 1990.
b/ Reflects reprogramming to effect corrective action on construction projects, in accordance with July 23, 1991 correspondence from the Secretary of Energy to Congressional committees (91-R-18).
c/ Application of general reduction for use of prior year balances included in FY 1995 appropriation.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 88-D-106, Nuclear Weapons Research, Development, and Testing Facilities Revitalization, Phase II, Various Locations

TEC: $390,119
TPC: $392,950

Start Date: 1st Qtr. FY 1988 Completion Date: 3rd Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1988	$ 28,962	$ 0	$ 28,960	$ 5,181
1989	72,352	0	72,352	16,254
1990	94,400	(36,449) a/	57,871	46,649
1991	72,547	(11,800) b/	59,946	52,322
1992	53,608	0	54,347	49,478
1993	34,400	0	34,448	53,194
1994	39,624	0	39,561	59,615
1995	20,980	0	20,980	49,910
1996	17,995	0	17,995	34,886
1997	0	0	0	12,299
1998	3,500	0	3,659	10,331

3. Narrative:

This project is the third project of a multiphased effort started in FY 1984 which provides for the construction of new facilities and modifications, relocations, and additions to existing facilities for the nuclear weapons stockpile stewardship complex. These new and modified facilities will replace or add to existing facilities that are overaged, deteriorated, overcrowded, or are inadequate to meet the capabilities required for the Research, Development and Testing program. Following is a list of subprojects:

1. Dormitories, NTS ($5,689,000)
2. High Intensity Source Laboratory, NLV ($2,091,000)
3. Construction Facilities Replacement-Area 6, NTS ($29,924,000)
4. Advanced Technology Laboratory, NLV ($3,140,000)
5. Dual-Axis Radiographic Hydrotest Facility, LANL ($81,400,000)
6. Materials Science Laboratory, LANL ($29,300,000)
7. Defense Engineering Laboratory, SNLL ($45,600,000)
8. Integrated Materials Research Laboratory, SNLA ($27,900,000)
9. Defense Programs Research Facility, LLNL ($72,640,000)
10. Nuclear Test Technology Complex, LLNL ($64,635,000)
11. Explosive Components Facility, SNL ($27,800,000)

Eight of these subprojects have been previously funded. Final year funding is requested for two subprojects. The scope of the eleventh (Dormitories, NTS) is currently being reviewed and no funding is currently requested for this subproject at this time.

The purpose of this project is to revitalize the stockpile stewardship complex and reverse erosion in the capabilities of the weapons stockpile stewardship capital asset base. FY 1996 funding will be used to complete construction and procurement of special facilities equipment for the Dual-Axis Radiographic Hydrotest Facility and $1,500,000 to complete construction of the Defense Programs Research Facility.

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a/ Reflects the sequestration of funds for FY 1990 (-$1,416,000) and the FY 1990 Omnibus reprogramming approved by appropriations subcommittees (-$35,033,000).

b/ Reflects the FY 1991 Omnibus reprogramming approved by Congressional subcommittees.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-111, National Ignition Facility
Site To Be Determined

TEC: $ 842,600a/
TPC: $1,073,600

Start Date: 1st Qtr. FY 1996 Completion Date: 3rd Qtr. FY 2002

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	$ 0	$ 0	$ 0	
1996	37,400	0	37,400	$ 33,400
1997	131,900	0	131,900	49,500
1998	197,800	0	197,800	180,700
1999	198,800	0	198,800	233,800
2000	191,300	0	191,300	184,400
2001	75,400	0	75,400	113,300
2002	10,000	0	10,000	47,500

3. Narrative:

The Project provides for the design, procurement, and construction of the National Ignition Facility (NIF) consisting of 192 laser beamlets. This facility is intended to achieve controlled thermonuclear fusion in the laboratory by imploding a small capsule containing a mixture of the hydrogen isotopes, deuterium, and tritium. It will be a key element in the Department of Energy Defense Programs (DOE-DP) experimental capabilities for maintaining nuclear weapons competence and nuclear weapons effects simulation. In addition, the NIF will play an essential role in developing inertial fusion energy for civilian power production and will provide a unique laboratory for the study of the behavior of matter at high energy densities. The project consists of a new experimental building, special equipment, and supporting utilities.

The NIF is an experimental fusion facility consisting of a laser and target area. The laser will be capable of providing an output pulse with an energy of 1.8 megajoules (MJ) and an output pulse power of 500 terawatts (TW) at a wavelength of 0.35 micrometers (um) and with specific symmetry, beam balance and pulse shape. The NIF experimental facility will house a multi-beam-line, neodymium (Nd) glass laser capable of generating and delivering the pulses to a target chamber. In the target chamber, a positioner will center a target containing fusion fuel, a deuterium-tritium mixture, for each experiment. Diagnostics provided by this project will provide the test data to demonstrate subsystem performance (TEC) and initial operations (TPC).

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a/ Funding requirements (BA) represent total estimated cost (TEC) of the project only. Activities included under other project cost (OPC) are explained in Item 13.a.2. and the corresponding operating expense funding identified in Item 12.a.2. are essential to achieving the project scope and schedule for the NIF.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ASSISTANT SECRETARY FOR DEFENSE PROGRAMS
(dollars in thousands)

KEY ACTIVITY SUMMARY

WEAPONS STOCKPILE MANAGEMENT

Overview: Stockpile Management

The Weapons Stockpile Management mission (formerly named Stockpile Support) is to provide for maintenance, evaluation, dismantlement, transportation, and disposal of nuclear weapons in accordance with quality, quantity and schedule requirements approved by the President in the Nuclear Weapons Stockpile Plan (NWSP), and the consolidation (Reconfiguration) of the nonnuclear weapons manufacturing activities as needed to maintain key technologies necessary to support the enduring stockpile. In addition to the traditional Core objectives of the Stockpile Management activities, the current Stockpile Management mission now encompasses: 1) the totality of the Radiological/Nuclear Accident Response Program (formerly named Emergency Response Program) previously split funded between the Weapons Stockpile Support and Research and Development Programs, 2) the new initiative Tritium Source Program, and 3) the Materials Surveillance and Technical Support Program (formerly funded within the Materials Support Program).

All DOE defense activities are undergoing reevaluation and change in light of the evolving post Cold War world environment, the United States' initiatives to reduce the nuclear weapons stockpile, and the increasing pressures to realize substantial budget savings. Within the last 12 months, overlapping FY 1994 and FY 1995, Defense Programs has changed mission emphasis and assignments; has ramped down and ceased component manufacturing and other maintenance and surveillance activities in support of the enduring stockpile at the Mound, Pinellas, and Rocky Flats Plant; is in the process of transferring landlord responsibility, except for nuclear material, at the Mound and Pinellas Plants, and all except the tritium facilities and nuclear material at the Savannah River Site to the Office of Environmental Restoration and Waste Management (RM); and has initiated the development of a forward-looking program, based on the Department's National Security Strategic Plan, which would focus on a long-term steady state Defense Programs budget that would support all essential program needs at minimum cost and would assure a credible nuclear deterrent consistent with efforts to reduce the worldwide danger of nuclear weapons.

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Missions:

The current major missions conducted by Stockpile Management are:

1. Core Stockpile Management

   This program includes lifetime maintenance, repair, and reliability assessment of the enduring stockpile; weapons dismantlement and disposal; maintenance of a production capability; development and operation of safe-secure systems for transporting nuclear weapons and components; and maintenance of a complex that operates meeting environment, safety, and health requirements.

2. Radiological/Nuclear Accident Response

   This program ensures the maintenance of the Department's technical and operational capabilities for responding to radiological accidents/incidents or malevolent nuclear incidents worldwide. The Radiological/Nuclear Accident response assets include the Nuclear Emergency Search Team, Federal Radiological Monitoring and Assessment Center, Aerial Measuring System, Atmospheric Release Advisory Capability, Accident Response Group, Radiological Assistance Program, and the Radiation Emergency Assistance Center/Training Site response.

3. Reconfiguration

This program has been significantly downsized in scope since its inception. The focus for FY 1996 will be to continue consolidation of nonnuclear manufacturing efforts within the Weapons Complex and to complete the Programmatic Environmental Impact Statement leading to a Secretarial Record of Decision for a site and/or technology for a new tritium source.

4. Tritium Source

This program will support the implementation of the Secretarial Record of Decision on tritium production and recycle facilities to provide tritium for the Nation's enduring Nuclear Weapons Stockpile.

5. Materials Surveillance and Technical Support

This program supports safety and safeguards/security programs activities. Activities include development of policy; review and evaluation of existing programs; upgrades as recommended due to life cycle needs, mission changes, or technology advances; compliance requirements; and the cost-effectiveness of overall program and/or proposals.

This program also supports materials surveillance activities located at former Defense Programs facilities that have been transferred to the Office of the Assistant Secretary for Environmental Restoration and Waste Management at Fernald, Hanford, and Idaho National Engineering Laboratory sites.

FY 1996 Budget Request:

Due to the realignment of the budget elements within the Stockpile Management Program the FY 1996 budget is presented on a comparable basis versus the traditional method of non-comparable. This change provides the benefit of allowing the FY 1996 column of the budget narrative (program activities and resource requirements) to reference changes from FY 1995 on a comparable basis. Since the budget request format does not show funding in the structure where it was appropriated, Tables 1 and 2 provide a crosswalk matrices for FY 1994 and FY 1995 to allow visibility into the development of comparabilities for these years.

The more significant changes that have occurred are:

1. Core Stockpile Management

Budget data and activity descriptions reflect the transfer out of the Mound, Pinellas, and Rocky Flats Plants to the Office of Environmental Restoration and Waste Management (EM). It also reflects the transfer out of former stockpile support emergency response activities/funding to the newly named Radiological/Nuclear Accident Response Program. All other elements and activities within the former Stockpile Support Program have remained within the Core Stockpile Management Program.

2. Radiological/Nuclear Accident Response

Budget data and activity descriptions reflect the consolidation of the previously split funded emergency response programs which were located in the Weapons Activities Research and Development and Stockpile Support Decision Units. This consolidation aligns the funding requirements with the program management responsibilities.

3. Reconfiguration

This program does not reflect any realignment. FY 1996 represents a continuation of prior year activities.

4. Tritium Source

This is a new FY 1996 initiative to provide the capability to produce tritium for the enduring stockpile.

5. Materials Surveillance and Technology Support

This program was transferred in to Stockpile Management from the Materials Support Program Decision Unit which has been discontinued as the result of the majority of the Materials Support Program activities and funding target being transferred to the Office Environmental Restoration and Waste Management (EM).

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Weapons Stockpile Management

Activity	FY 1994 Adjusted	FY 1995 Approp.	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Stockpile Management					
Operating Expenses	$ 1,754,283 a/	$ 1,629,187 d/	$ -5,713 f/	$ 1,623,474	$ 1,762,168 h/
Capital Equipment	22,445	28,780	0	28,780	33,290
Construction	107,550 b/	107,320	0	107,320	111,425
Subtotal, Stockpile Management	$ 1,884,278	$ 1,765,287	$ -5,713	$ 1,759,574	$ 1,906,883
Use of Prior Year Balances	- 360,141 c/	- 50,765 e/	-1,287 g/	- 52,052	- 58,444 i/
Total Program	$ 1,524,137	$ 1,714,522	$ -7,000	$ 1,707,522	$ 1,848,439
Program Summary					
Core Stockpile Management	$ 1,537,165	$ 1,441,404	$ -5,713	$ 1,435,691	$ 1,559,160
Radiological/Nuclear Accident Response	65,395	69,054	0	69,054	70,910
Reconfiguration	159,481	152,271	0	152,271	121,065
Tritium Source	0	0	0	0	50,000
Materials Surveillance & Technical Support	122,237	102,558	0	102,558	105,748
Subtotal, Stockpile Management	$ 1,884,278	$ 1,765,287	$ -5,713	$ 1,759,574	$ 1,906,883
Use of Prior Year Balances	- 360,141	- 50,765	-1,287	- 52,052	- 58,444
Total Program	$ 1,524,137	$ 1,714,522	$ -7,000	$ 1,707,522	$ 1,848,439
Staffing (FTE's)	949	905		905	1,003

a/ Reflects a FY 1994 Enacted Appropriation plus a composite of $357,141,000 in prior year balances to be executed in FY 1994; also reflects a contractor salary freeze adjustment of $19,972,000.

b/ Reflects FY 1994 Enacted Appropriation plus a composite of $3,000,000 in prior year balances to be executed in FY 1994; also reflects 2 internal reprogrammings totaling $1,000,000 in prior year balances from Project 91-D-122, Short Range Attack Missile-Tactical Production Facilities to Project 85-D-115, Renovate Plutonium Building Utility Systems, Rocky Flats Plant ($500,000); and to Project 85-D-113, Power Plant and Distribution System, Pantex Plant ($500,000). Project 85-D-115 was transferred to the Office of Environmental Restoration and Waste Management (-$500,000), and GPD-146 (Y-12 Plant) was transferred from Materials Support to Materials Surveillance and Technical Support (+$950,000).

c/ Reflects the use of prior year balances ($357,641,000 in operating expenses, $2,500,000 in construction) to offset FY 1994 requirements for new budget authority.

d/ Reflects a contractor salary freeze reduction of $36,496,000 and a productivity improvement savings of $21,055,000.

e/ Reflects the use of prior year balances to offset FY 1995 requirements for new budget authority ($9,865,000 in operating, $40,900,000 in construction.)

f/ Reflects a reduction of $5,713,000 in procurement reform savings.

g/ Reflects the use of $1,287,000 in prior year prefinancing balances to offset requirements for new budget authority ($1,287,000 in operating).

h/ Reflects a reduction of $10,437,000 for contractor reform savings.

i/ Reflects the use of prior year balances to offset FY 1996 requirements for new budget authority ($46,800,000 in operating, $11,643,800 in construction).

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(dollars in thousands)

Summary of Changes
Comparable

Weapons Stockpile Management

FY 1995 Appropriation (Stockpile Support)	$1,646,504
- Adjustment - Use of Prior Year Funds to offset FY 1995 New Budget Authority	+ 52,052
- Adjustment - Reflects a reduction for procurement reform	- 5,713
FY 1995 Adjusted/Amended (Stockpile Support)	$1,692,843
- Transfer of Management responsibility for the Mound and Pinellas Plants and remaining nonnuclear buildings at the Rocky Flats Plant to the Office of Environmental Restoration and Waste Management	- 105,500
- Transfer of Nuclear Accident Response Activities previously funded within the Weapons Research and Development Decision Unit	+ 55,610
- Transfer of Materials Surveillance and Technical Support Activities from the Materials Support Decision Unit	+102,558
- Transfer of Building-232 activities at the Savannah River Site from the Materials Support Decision unit	+ 14,063
FY 1995 Comparable	$1,759,574
Core Stockpile Management	
Operating Expense	
- Increase in direct and overhead operating expenses required to support an ability to maintain, evaluate, modify, improve and dismantle warheads, bombs, and shells in accordance with the nuclear weapons stockpile plan, and to maintain a safe, secure infrastructure. Increase provides for escalation, minor growth in direct/direct support activities resulting from the transfer of nonnuclear technologies, higher institutional allocations, and procurement of new pit storage containers.	+ 98,819
Capital Equipment	
- Increase in complex-wide Capital Equipment requirements, e.g. infrastructure, environment, safety and health, safeguards and security, etc. Partially restores equipment to funding base following drawdown of uncosted balances.	+ 4,510
Construction	
- Increase in complex-wide General Plant Project following drawdown of uncosted balances	+ 9,000
- Provides for 3 new starts-2 ES&H driven and 1 FCAP	- 690
- Provides for construction mortgages	+ 11,830

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Weapons Stockpile Management
Summary of Changes
Comparable

Radiological/Nuclear Accident Response

Operating Expense

- Provides for an accident response full field exercise; continuation of technology integration for improved device and weapon search, detection, and recovery; upgrade and maintenance of deployment equipment and personnel support in the event of a nuclear accident or incident during a deployment within or outside the continental United States. . . . . + 956

Construction

- Provides for initiation of design and procurement of equipment for the replacement of the Washington Aerial Measurements Operation Facility to be constructed at the Andrews Air Force Base. . . . . + 900

Reconfiguration

Operating Expense

- Decrease from the FY 1995 level due to the reduced scope of the Reconfiguration effort; FY 1996 activities are focused solely on nonnuclear consolidation, which is about constant over the FY 1995 level and is consistent with the schedules contained in the Nonnuclear Reconfiguration Implementation Plan. . . . . - 14,271

Construction

- Decreased from the FY 1995 level consistent with the schedules contained in the Nonnuclear Reconfiguration Implementation Plan. Major focus areas include the following: neutron generators, beryllium technology, pit support, gas transfer system and reservoir surveillance operations. Provides for detailed design and facility modification costs associated with Consolidation of Nonnuclear Facilities. . . . . - 16,935

Tritium Source

Operating Expense

- Provides for implementation of the Secretarial Record of Decision on tritium production and recycle facilities to provide tritium for the Nation's enduring Nuclear Weapons Stockpile. . . . . + 50,000

Materials Surveillance and Technical Support

Operating Expense

- Supports materials processing and recovery activities at Oak Ridge facilities; headquarters safeguards and security oversight activities; and materials surveillance activities at former Defense Programs sites including Fernald, Hanford, and Idaho National Engineering Laboratory. . . . . + 3,190

FY 1996 Congressional Budget Request $1,906,883

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TABLE 1
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS STOCKPILE MANAGEMENT PROGRAM
COMPARABILITIES - FY 1994 CROSSWALK
$ in Thousands

	Adjusted FY 1994 Stockpile Support	TRANSFERS				Total FY 1994 Stockpile Management
		Surplus Fissile Materials	Environmental Management	Accident Response	Materials Support	
Core Stockpile Management						
Operating Expense	1,773,568	0	(330,910)	(11,205)	12,476	1,443,929
Capital Equipment	12,136	0	0	(500)	0	11,636
Construction	82,100	0	(500)	0	0	81,600
Subtotal, Core	1,867,804	0	(331,410)	(11,705)	12,476	1,537,165
Use of prior year balances	(313,641)	0	500	0	0	(313,141)
Total, Core	1,554,163	0	(330,910)	(11,705)	12,476	1,224,024
Radiological/Nuclear Accident Response						
Operating Expense	0	0	0	56,371	0	56,371
Capital Equipment	0	0	0	9,024	0	9,024
Construction	0	0	0	0	0	0
Total, Accident Response	0	0	0	65,395	0	65,395
Use of prior year balances	0	0	0	0	0	0
Total, Accident Response	0	0	0	65,395	0	65,395
Reconfiguration						
Operating Expense	168,181	(33,700)	0	0	0	134,481
Capital Equipment	0	0	0	0	0	0
Construction	25,000	0	0	0	0	25,000
Total, Reconfiguration	193,181	(33,700)	0	0	0	159,481
Use of prior year balances	(41,000)	0	0	0	0	(41,000)
Total, Reconfiguration	152,181	(33,700)	0	0	0	118,481
Materials Surveillance and Technical Support						
Operating Expense	0	0	0	0	119,502	119,502
Capital Equipment	0	0	0	0	1,785	1,785
Construction	0	0	0	0	950	950
Total, Technical & Admin Support	0	0	0	0	122,237	122,237
Use of prior year balances	0	0	0	0	(6,000)	(6,000)
Total, Mtl Surveil and Tech Support	0	0	0	0	116,237	116,237
Subtotal, Stockpile Management	2,060,985	(33,700)	(331,410)	53,690	134,713	1,884,278
Use of prior year balances	(354,641)	0	500	0	(6,000)	(360,141)
Total, Stockpile Management	1,706,344	(33,700)	(330,910)	53,690	128,713	1,524,137

TABLE 2
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS STOCKPILE MANAGEMENT PROGRAM
COMPARABILITIES - FY 1995 CROSSWALK
$ In Thousands

	Adjusted FY 1995 Stockpile Support	TRANSFERS				Total FY 1995 Stockpile Management
		Surplus Fissile Materials	Environmental Management	Accident Response	Materials Support	
Core Stockpile Management						
Operating Expense	1,471,072	0	(105,500)	(12,944)	14,063	1,366,691
Capital Equipment	20,180	0	0	(500)	0	19,680
Construction	49,320	0	0	0	0	49,320
Subtotal, Core	1,540,572	0	(105,500)	(13,444)	14,063	1,435,691
Use of prior year balances	(45,287)	0	0	0	0	(45,287)
Total, Core	1,495,285	0	(105,500)	(13,444)	14,063	1,390,404
Radiological/Nuclear Accident Response						
Operating Expense	0	0	0	60,954	0	60,954
Capital Equipment	0	0	0	8,100	0	8,100
Construction	0	0	0	0	0	0
Total, Accident Response	0	0	0	69,054	0	69,054
Use of prior year balances	0	0	0	0	0	0
Total, Accident Response	0	0	0	69,054	0	69,054
Reconfiguration						
Operating Expense	94,271	0	0	0	0	94,271
Capital Equipment	0	0	0	0	0	0
Construction	58,000	0	0	0	0	58,000
Total, Reconfiguration	152,271	0	0	0	0	152,271
Use of prior year balances	(6,765)	0	0	0	0	(6,765)
Total, Reconfiguration	145,506	0	0	0	0	145,506
Materials Surveillance and Technical Support						
Operating Expense	0	0	0	0	101,558	101,558
Capital Equipment	0	0	0	0	1,000	1,000
Construction	0	0	0	0	0	0
Total, Technical & Admin Support	0	0	0	0	102,558	102,558
Use of prior year balances	0	0	0	0	0	0
Total, Mtl Survell and Tech Support	0	0	0	0	102,558	102,558
Subtotal, Stockpile Management	1,692,843	0	(105,500)	55,610	116,621	1,759,574
Use of prior year balances	(52,052)	0	0	0	0	(52,052)
Total, Stockpile Management	1,640,791	0	(105,500)	55,610	116,621	1,707,522

Weapons Stockpile Management

I. Preface: Core Stockpile Management

The United States' initiatives to reduce the nuclear weapons stockpile have had significant near-term and long-term effects on the Nation's nuclear weapons production complex. First, there are no requirements for new weapon builds throughout the planning period. Second, the accelerated rate of weapon retirements has created a large backlog of warheads that need to be dismantled and disposed of. Third, the significantly reduced maintenance and surveillance workload associated with the enduring stockpile has permitted the consolidation of nonnuclear manufacturing operations within the weapons production complex. Along with these changes has come increasing pressure to realize substantial budget savings in the Core Stockpile Management Program. In this regard, Defense Programs ramped down and concluded component manufacturing and other maintenance and surveillance activities in support of the enduring stockpile at the Mound, Pinellas, and Rocky Flats Plants at the end of FY 1994 with landlord responsibilities for these sites proposed to transfer to the Office of Environmental Restoration and Waste Management (EM). Other impacts resulting from the consolidation and other budget savings activities include reductions to the work force; a downsizing of the remaining complex's infrastructure activities; and a slower rate of closure on U.S. Department of Energy (DOE) Order Compliance (risk based compliance) issues and Defense Nuclear Facilities Safety Board recommendations.

The United States' initiatives have brought with them the challenge of maintaining capabilities vital to the support of the nuclear weapons stockpile in the absence of explicit Department of Defense requirements for the production of new nuclear weapons. The skills and competencies required for our specialized work are unique and have taken years to develop to the high level of technical excellence and sophistication that exists today. These skills must be preserved for normal stockpile surveillance, evaluation, maintenance, and most importantly to safely dismantle weapons, to effect nuclear weapons repairs, which can be required and, indeed have been required over the years; and to resume production of nuclear weapons if required. The program that Defense Programs initiated in FY 1993 to maintain this capability is referred to as the Production Capability Assurance Program (PCAP). The principal objective of PCAP is to assure, at reasonable cost, minimum capabilities in key processes to support the enduring stockpile; to maintain viable design, development, and production interrelationships among plants and laboratories; to implement pollution prevention techniques that would eliminate or minimize the waste generation and workplace hazards anticipated from the performance of assigned missions; and to facilitate implementation of modern quality principles in design and manufacturing. These capabilities are being maintained through continuing workload (as defined in the Nuclear Weapons Stockpile Plan) associated with stockpile maintenance and surveillance, and through enhanced process development and technology demonstration.

Core Stockpile Management activities involve the procurement of materials (exclusive of nuclear materials); fabrication and assembly of nuclear weapons and weapon components, if required; lifetime maintenance and reliability assessment of the enduring stockpile; weapons dismantlement and disposal; maintenance of a production capability; development and operation of safe-secure systems for transporting nuclear weapons and weapons components; and preparation, issuance, and maintenance of field training manuals. The Core Stockpile Management budget category also contains the funding for Federal employment and related services at the Albuquerque Operations Office (AL), Oak Ridge Operations Office (OR), and Savannah River Operations Office (SR) in support of the Core Stockpile Management mission.

I. Preface: Core Stockpile Management (con't)

To maintain and evaluate the safety, security, control and reliability of the enduring stockpile is no small task and has become the most critical program objective since new weapons production activities have ceased and are not planned to resume in the near term. Core Stockpile Management activities include production of operational spares, logistic spares, quality assurance and reliability testing, and weapon repair, retrofit, modification, or conversion. It also supports a constant level of about 1,500-2,000 nuclear weapon warheads dismantlements through FY 1996.

The FY 1996 budget request is sufficient to maintain compliance with currently known legal requirements; to support the objectives of the Production Capability Assurance Program; and to work towards compliance with high priority DOE Orders and instructions, recognizing that full compliance without waivers will take several years. New orders are being written and issued by the Department which require significant resources for implementation. In addition, the Defense Nuclear Facilities Safety Board has issued numerous recommendations that the Department has agreed to implement, which also require significant resources.

Funding for the construction of facilities, procurement of capital equipment, and for plant operations is also included in this request. Only essential construction projects at the Kansas City, Pantex, and Y-12 Plants will be continued, with only three new starts; two are environmental, safety, and health projects to provide upgrades related to the health and safety of workers and the public such as pollution prevention and the Clean Water Act; and the other is a Facilities Capability Assurance Program (FCAP) subproject to address infrastructure deterioration.

The budget does provide $2,888 funding for health studies of baryllium workers. This activity is managed by the Office of the Assistant Secretary for Environment, Safety and Health (EH).

The narrative justifications found in Section III, Activity Descriptions, address the program levels.

Core Stockpile Management operating expenses funding is divided into 14 major programs. The programs and their current descriptions are as follows:

a. Weapons Programs

This category was established to include those activities directly related to the processing, fabrication, assembly, evaluation, maintenance, dismantlement, and disposal of nuclear weapons. However, the focus of program activities in the FY 1996 budget request is evaluation, maintenance, and dismantlement.

War Reserve New Production

This category historically included direct costs incurred for procurement and/or manufacture of materials, piece parts, and assemblies required in the final assembly of warheads to be delivered to the Department of Defense in direct compliance with the Nuclear Weapons Stockpile Plan covering the budget period as well as future years and for production/process engineering required to support future weapons delivery. However, the FY 1996 budget request does not include any new production requirements or costs in this category.

I. Preface: Core Stockpile Management (con't)

Stockpile Maintenance

This category includes those activities required to maintain weapons and weapons components currently in the nuclear weapons war reserve stockpile. Included are the costs associated with repairing nuclear weapons and significantly modifying or modernizing nuclear weapons (Stockpile Improvement Program) in the stockpile. Funding is also provided to procure, fabricate, and assemble material and piece parts into weapons components which will be used to replace like components having limited life, including nuclear materials. The costs incurred to dismantle, disassemble, and dispose of nuclear weapons retired from the stockpile are also funded under this subactivity.

Stockpile Evaluation

These activities assure the high quality and reliability of nuclear weapons and components in the enduring war reserve stockpile and those products to be delivered to the stockpile. A vigorous reliability assessment program is necessary to continuously evaluate and determine that nuclear weapons are maintained in the stockpile according to design specifications and that transportation, deployment, and storage of nuclear weapons over the stockpile lifetime do not result in degradation. Semi-Annual reliability reports are issued for every weapon throughout its stockpile life.

b. Production Support Program

This program includes activities concerned with furnishing services that support the Weapons Programs functions and are not directly identified or allocated to specific weapon systems. The activities supporting the Weapons Program functions include: quality supervision and control; field engineering, training and manuals; Sandia quality assurance and surveillance; production supervision and control; changes in plant inventories; facility startup costs; facility standby costs; production engineering; and other mission support. Some activities fluctuate with workload requirements, others are relatively constant levels of effort.

c. Production Capability Assurance Program

This program includes activities aimed at maintaining longer-term competence in key manufacturing technologies and to develop and demonstrate production capability for improved surety components. These activities are further identified as:

Maintain Stockpile This activity is aimed at maintaining competence in key manufacturing processes, which are needed to ensure the viability of the enduring stockpile.

Improve Stockpile This activity is aimed at developing and demonstrating production capability for components, subassemblies, and assemblies, which could be accepted for weapons use and which have application to safety, security, use control, or reliability upgrades of the enduring stockpile.

Pollution and Hazard Prevention This activity supports technology development projects to eliminate or minimize the waste generation and workplace hazards at the source during the performance of assigned missions.

I. Preface: Core Stockpile Management (con't)

Advanced Manufacturing and Plant Operations This activity supports efforts in advanced development, development activities to facilitate standardization, implementation of modern quality principles in design and manufacturing, computer integrated manufacturing and automation/robotics.

Weapons Technology Development Weapons Technology Development (TD) supports research work directed toward the understanding of new phenomena related to nuclear materials or nuclear components. The PCAP Weapons TD efforts represent studies of those materials and processes for which the nuclear plants have unique expertise, facilities, and responsibilities.

d. Materials Recycle and Recovery

This program includes, when required, activities associated with recycle and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement of weapons and components.

Disposal Activities This activity includes the process involved in obtaining the above materials from limited life components and weapons retirements/dismantlements for recovery.

Recovery Process This activity includes the process involved in recycling and purifying the above material to meet specifications for safe, secure, and environmentally acceptable storage.

Technology Development and Exchange This activity includes effort for plutonium and uranium related to the development and implementation of new processes or improvements to existing processes for fabrication and recovery operations, and for material stabilization, conversion and storage.

e. Environmental Program

This program supports base activities associated with environmental protection and technologies that are part of the mission of the weapons activities. It does not include operations that are funded in the Environmental Restoration and Waste Management account. The environmental base program activities are performed on a routine basis at active facilities and are necessary to maintain compliance with requirements of Federal, state, and local laws and regulations (e.g., compliance monitoring, pollution prevention); and DOE directives (e.g., environmental data base monitoring). This category includes those activities necessary to achieve compliance in the future, when an out-of-compliance condition will arise as a result of new regulatory requirements. The Environmental Base Program addresses the following three subprograms:

1. Auditing and Evaluation Those activities associated with the routine mechanism (required by DOE directives) to assure environmental compliance. Audit activities concern the evaluation of a facility's performance against established environmental protection standards and criteria. Evaluation includes the assessment of new programs, operations or experiments to assure adequate monitoring, regulatory compliance, and environmental performance, or to evaluate existing operations in light of new regulations.

I. Preface: Core Stockpile Management (con't)

2. Effluent and Environmental Monitoring and Surveillance Those activities associated with the collection of representative samples and the conduct of accurate analysis of same. Monitoring activities include data base monitoring as required by DOE directives or compliance monitoring as required by the environmental regulatory authorities. Compliance monitoring includes monitoring effluent to assess status with respect to standards or permit conditions. Monitoring activities include the following areas:

   Air Release Activities, Water Discharge Activities, Solid Waste Activities These activities include air quality; water quality; meteorological monitoring; measurement of external radiation; monitoring of soil, vegetation and biota; ecological studies; and dispersion and dose modeling.

3. Permitting Those activities necessary to obtain permits from regulatory agencies regarding plant releases and/or discharges. Examples of types of permits are National Pollutant Discharge Elimination System permits, Resource Conservation and Recovery Act (RCRA) permits, and Clean Air Act National Emissions Standards for Hazardous Air Pollutants approvals or permits. Includes those activities involved in reporting the results of environmental monitoring, analysis, and evaluation. This includes the environmental data base information, which is published and distributed annually by individual site; compliance monitoring information, which is submitted to the regulatory agencies pursuant to permit requirements; National Environmental Policy Act documents; and environmental performance assessments.

f. Waste Management Program

This program includes activities associated with refuse collection, handling, removal, and disposal and plant sanitation activities. Also includes funding for characterization, packaging, handling, and interim storage of hazardous, radioactive, and mixed waste, and pollution prevention functions, which include opportunity assessments/awareness training. Activities associated with disposal of hazardous, radioactive, and mixed wastes are funded in the Environmental Restoration and Waste Management account.

g. Health and Safety Program

This program supports those activities required for industrial hygiene, radiological protection, occupational medicine, safety and fire protection, and internal emergency management for DOE.

- Industrial Hygiene Identifies those activities required to implement and maintain an industrial hygiene program in compliance with DOE Orders, the Contractor Industrial Hygiene Program, and other standards of good practice. Included are (a) contractor industrial hygiene staff; (b) workplace and personnel monitoring of hazardous materials; (c) hazard communications program; (d) documentation of monitoring results; (e) verification of control measures; (f) record keeping and reporting; (g) training programs; (h) purchase of protective equipment such as respirators, gloves, glasses, and hearing protectors; (i) control of physical and chemical agents; and (j) removal of asbestos and PCB transformers and replacement of chemicals with safer materials.

- Radiological Protection Includes activities required to implement and maintain a radiological protection program in compliance with DOE Orders. Activities include: (a) monitoring for identification and control of potential exposure sources; (b) measures to control surface or airborne radioactive contamination; (c) confinement, ventilation, remote handling, and shielding; (d) posting and labeling containers or areas of contamination; (e) entry and boundary control programs; (f) internal and external dosimetry programs; (g) record keeping and reporting; (h) procedures and standards development; and (i) training.

I. Preface: Core Stockpile Management (con't)

- Occupational Medicine Includes those activities required to implement and maintain an occupational medical program in compliance with DOE Order 5480.8, Contractor Occupational Medical Program. Activities include: (a) medical staff; (b) operation of dispensary or other emergency medical facilities; (c) employee health examination; (d) treatment for occupational injury or illness; (e) health education and counseling; (f) record keeping and reporting; (g) emergency and disaster preparedness; and (h) training.

- Fire Protection Includes internal contractor organizations and functions with responsibility for fire prevention, fire detection, fire suppression systems, and related inspections, testing, and training. Activities for this element include: (a) full-time or volunteer fire fighting and emergency response teams; (b) loss prevention; (c) operation of ambulance and fire fighting equipment; and (d) testing and inspection of fire protection equipment and alarm systems. The maintenance of vehicles and installed detection, alarm, and suppression systems is reported under the maintenance program.

- Industrial Safety Includes internal contractor activities involved in explosives safety, construction safety, aviation safety, firearms safety, Occupational Safety and Health Administration requirements, and accident reporting requirements. Activities for this element include: (a) inspections of routine operations, construction, and new and modified facilities before startup; (b) review of operational plans and procedures; (c) accident/incident/occurrence investigation and reporting; (d) training; (e) dissemination of policies and procedures; (f) safety of electrical systems, pressure systems, construction, and motor vehicles; (g) design reviews; and (h) preparing and developing plans.

- Nuclear Facility Safety Includes internal contractor organizations and functions with responsibility for compliance with applicable requirements for nonreactor nuclear facility safety, and criticality safety. Activities include: (a) independent safety review and appraisal systems; (b) training; (c) notification, investigation, and reporting of occurrences; (d) emergency plans; and (e) establishment of technical specifications and operational safety requirements.

- Packaging Certification Includes those activities involving safety with regard to packaging of weapons and nonweapons-related radioactive materials, hazardous substances, and explosives (not waste). Activities include (a) design, test certification, and evaluation; (b) record keeping and retention; and (c) training. The procurement and fabrication of shipping containers are reported under the Weapons Programs.

- Facility Safety Design Includes those activities involving facility budgeting and planning, design criteria, facility design, operational safety requirements, and operational readiness reviews. Activities include: (a) preparing long-range planning documents; (b) establishing priorities for projects and activities; and (c) developing supporting documentation for Environmental, Safety, and Health budget efforts.

- Risk Management Includes those activities involving safety analysis and review systems. Activities include (a) conducting safety assessments and risk evaluations, (b) preparing Preliminary Safety Analysis Reports, and (c) preparing operational safety requirements and Final Safety Analysis Reports.

The program also supports Internal Emergency Management System (IEMS) activities that include: Space Nuclear Power activities and Emergency Operations Center activities in support of Emergency Operations and Continuity of Government activities.

I. Preface: Core Stockpile Management (con't)

h. Safeguards and Security Program

This program provides personnel and operating costs for: nuclear material control and accountability activities, including measurement systems, control systems and devices, nuclear material inventory control, accounting, reporting and computing; physical security, including security inspections, escorts, response teams and dog forces; technical security, including computer security, technical surveillance and countermeasures, operation of alarm systems, encryption equipment and devices, detection and electronic access control systems; personnel security activities such as the Personnel Security Assurance Program, clearance processing, visitor control, and pre-employment screening.

i. Site Planning and Project Management

This program provides base program funding for engineering and engineering support activities for general plant projects: construction project data sheets; preliminary cost estimates; preliminary design proposals; concept designs; specifications; Titles I and II design documents; subcontract oversight; master planning; facility assessments; computer-aided design/computer-aided engineering (CAD/CAE); value engineering; cost/schedule control; utility engineering; energy management planning; configuration control and general facility engineering and management.

j. Utilities Program

This program supports activities required to provide electricity, fuels, water, sewer, and utility support services in support of plant operations. Also implements DOE guidance to perform oversight of the weapons complex utility infrastructure, managing utility resource studies, data base management, and utility services including the areas of utility contract acquisition and administration. Engineering and maintenance related to utility systems are covered under these programs.

k. Maintenance Program

This program supports activities associated with maintenance. It includes manufacturing related maintenance: equipment maintenance, facilities maintenance, and plant maintenance. Excluded are craft shops that are used in the fabrication of weapons or weapons components or in fabrication of tooling associated with specific weapon systems. These activities are divided into the following major categories:

- Manufacturing Related Maintenance This program includes activities necessary to support the maintenance of production equipment and facilities. It includes the setup, equipment fabrication, installation, maintenance and calibration of production equipment, and the maintenance of facilities used in manufacturing operations. This category is further defined in terms of the following subcategories:

- Equipment Includes that which is used for programmatic purposes; e.g., manufacturing, tooling, machinery, chemical processing lines, and items of similar nature. This category should also include costs associated with modification to existing equipment change the intended design of the equipment or improve the reliability and functioning of the equipment.

I. Preface: Core Stockpile Management (con't)

- **Facilities** A general term that can be used to describe any or all of the three types of fixed-site improvements, which are buildings, structures, and utilities that are utilized in manufacturing operations. This category should also include costs associated with rearrangements performed in relocating or installing partitions, office furniture, and other associated activities.

- **Plant Maintenance** This subprogram includes activities necessary to support organizational units involved in general plant maintenance functions such as the following:

  (1) general shop operations including carpentry, painting, motor pool, pipe fitting, electrical and electronic crafts;
  (2) general plant maintenance involving facilities modification or repair, roads, and grounds utility systems, and plant equipment; and
  (3) custodial and janitorial services involved in plant housekeeping and insect and rodent control.

1. **Management and Administration Program**

This program includes those activities associated with general management and administrative functions. Activities supported include the following:

- **Information Outreach** Supports activities, which provide public information to the general public and news media, plant newspaper, and other public relations activitiss.

- **Information Services** Supports activities for ADP services, communications (telephone systems, teletype and fax operations, communication centers), and networking.

- **Taxes** Supports state and local tax liabilities (gross receipt taxes, franchise taxes, etc.).

- **Executive Direction** Supports activities of facility managers and their immediate office executive staff, special assistant and their immediate offices, and strategic planning staff.

- **Human Resources** Supports activities for recruiting, wage and salary administration, equal employment opportunity activities, benefits administration, employee fitness programs, training services, industrial relations, personnel records, employee claims, adjudications, grievances, arbitration, and other personnel services.

- **Chief Financial Officer** Supports activities for accounting, budgeting, payroll, internal audit, maintenance, and operation of cost systems.

- **Procurement** Supports activities for the contracting, purchasing, and acquisition of resources.

- **Legal** Supports activities for legal counsel support, both in-house and outside contracted.

- **Logistics Support** Supports activities for shipping and receiving, transportation, warehousing, motor pools, property management, and other logistic support.

I. Preface: Core Stockpile Management (con't)

- Administrative Support Supports activities for clerical support pools, word processing centers, travel support, food service, office management activities, printing and graphic support, and general purpose libraries and records management activities.

- Quality Assurance Supports activities for the management of all quality assurance and reliability activities, which are institution-wide (including oversight of the operational surety program and conduct of operations programs).

- Management/Fee Supports amounts paid in fixed fees, base and award fees, goal achievement objectives, incentive fees, and any other form of fees paid by DOE.

- Laboratory-Directed R&D Supports activities in accordance with DOE Order 5000.4A for the purpose of pursuing new and innovative scientific concepts of benefit to DOE.

- Other Supports activities not identified in another specific category. Examples are contractor support for DOE site offices, inventory changes not included in production support.

m. Safe Secure Transportation Program

This program supports activities for transporting weapons, weapons components, and materials from DOE production plants and storage sites or other final destinations; operation of the DOE high-frequency secure communications network; and maintenance of all transportation vehicle and communications equipment. Includes funding for personnel and related costs of the Albuquerque Operations Office Transportation Safeguards Division under the single manager concept. The Transportation Safeguards System, certified containers, and packaging system are specially designed to transport the U.S. enduring nuclear stockpile in a safe, secure, efficient, and cost-effective manner; to ensure the protection of the general public and the environment from potential transportation hazards; and to significantly reduce the risks and consequences of a transportation accident.

n. Federal Support Program

This program supports the activities of the Albuquerque Operations Office, (AL) Oak Ridge Operations Office, (OR) and Savannah River Operations Office, (SR) and the various area offices. Includes funding for: general management; executive direction; general supervision of program operations; negotiation and administration of operating contractors and other procurement; weapons production complex resource management and planning; technical oversight and review; conduct of special programs and activities managed by AL. Program costs include Federal salaries, personal services, personnel benefits, travel, training, and supplies and support services necessary to conducting operations at AL, OR, and SR and in the area, project, and support offices.

Capital funding for construction of production support facilities and basic equipment and computers are identified as separate activities.

Environment, Safety, and Health construction and Safeguards and Security construction are also highlighted as separate activities.

I. Preface: Core Stockpile Management (con't)

Performance Goals and Indicator Elements for FY 1996

- Reduce the backlog of retired weapons by dismantling 1369 warheads in FY 1994, 2010 in FY 1995, and 2000 in FY 1996.

- Maintain warheads through a robust surveillance program to detect deficiencies in the stockpile. This program consists of both destructive and non-destructive testing of weapon systems at the final assembly and pit levels. Over 100 tests are conducted on complete weapon systems are tested each year. In addition, over 20 pits are tested in each 18 month cycle to ensure the continued safety and reliability of these components.

- Maintain a nuclear weapons stockpile as depicted in the FY 1994-FY 1999 Nuclear Weapons Stockpile Plan by supporting limited life component (LLC) exchange schedules. DOE expects to deliver the following quantities of LLC "kits" to the Department of Defense to support the enduring stockpile: 2576 in FY 1994, 1370 in FY 1995, and 711 in FY 1996.

Weapons Stockpile Management

II. Preface: Radiological/Nuclear Accident Response

The Radiological/Nuclear Accident Program ensures the maintenance of DOE's technical and operational capabilities for responding to radiological accidents/incidents worldwide. The following seven emergency response assets are utilized to carry out the assigned task: **The Aerial Measuring System** (AMS) provides airborne sensing capability for monitoring environmental impacts at major DOE and other Federal agency facilities: tracks plumes and maps radiation dispositions, and conducts routine surveys for the nation's nuclear facilities. **The Atmospheric Release Advisory Capability** (ARAC) supports DOE's centralized computer-based system that provides estimates of transport, diffusion, deposition of radioactive and other hazardous material released to the atmosphere, and dose projections. **The Accident Response Group** (ARG) supports DOE's resolution of accidents and significant incidents worldwide involving nuclear weapons that are in DOE and DOD custody at the time of the accident or incident. **The Federal Radiological Monitoring and Assessment Center** (FRMAC) supports DOE's lead role for establishing and managing the FRMAC as detailed in the Federal Radiological Monitoring and Assessment Plan required by the Federal Radiological Emergency Response Plan. **The Nuclear Emergency Search Team** (NEST) supports the operations, exercise, and maintenance of DOE's specially trained scientists, engineers, and technicians who provide technical assistance in responding to a threat by an individual or group to detonate a nuclear explosive or scatter nuclear materials. The NEST program (1) conducts technology integration in containment and effects, disablement and diagnostics, (2) coordinates training programs, and (3) maintains the capability to respond through frequent exercises. **The Radiological Assistance Program** (RAP) provides for DOE's first responder assistance for initially addressing an accident or incident involving radiological materials in support of the DOE complex, including other Federal, State, Tribal, and local government agencies. **The Radiation Emergency Assistance Center/ Training Site** (REAC/TS) provides DOE's medical and health physics support to radiological accidents and incidents. Support is provided via direct and consultative assistance, which is recognized by the World Health Organization as the world collaboration Center for radiation accident management.

<u>Performance and Evaluation Indicators for FY 1996:</u>

- Participate in one Department of Defense (DOD) sponsored national exercise to evaluate, to validate, and demonstrate response to a nuclear accident utilizing assets from both the Department of Energy (DOE) and DOD to resolve the emergency.

- Complete the design, development, and utilization of specific unique equipment to perform assessments and evaluations of damaged nuclear components following an accident or malevolent incident. Field capable equipment scheduled for completion in FY 1996 include the Portable Integrated Video System (PIVS) DOE to allow assessment performance from a safe location, and the Linear Accelerator for non-destructive assessment and evaluation of a damaged weapon.

- Participation in Exercise METEL in which the DOD/EOD and Department of Energy emergency response assets integrate technical expertise to evaluate performance of safing and recovery procedures.

- Complete development and validation of readiness standards for the unique emergency response national assets to respond technically and operationally to radiological incidents and accidents involving nuclear materials and weapons anywhere in the world.

III. Preface: Reconfiguration

The Environmental Assessment for consolidating the nonnuclear manufacturing facilities has been approved by DOE and the final FONSI was approved on September 8, 1993. The plan calls for consolidating most nonnuclear activities at the Kansas City Plant with a few activities assigned to the Los Alamos National Laboratory and the Sandia National Laboratories to preserve technology. Tritium work presently done at the Mound Plant would be relocated to the Savannah River Site with two minor exceptions, commercial sales and the loading of inertial fusion targets. These two activities are being established at the Los Alamos National Laboratory. Consolidation of the nonnuclear weapons manufacturing activities is needed to maintain key technologies associated with the design and manufacture of nonnuclear weapons components required to support the enduring stockpile. As budgets contract, the collocation of these technologies provides the mechanism to exercise and retain the special skill base necessary to produce and test replacement components.

In keeping with the September 8, 1993, approved FONSI for nonnuclear consolidation, implementation is underway. All activities related to nuclear weapons development, production, procurement, surveillance, or testing has ceased at the Mound, Pinellas, and Rocky Flats Plants no later than September 30, 1994. Efforts are underway to transfer and qualify 26 activities previously conducted at these sites to the receiver sites. Donor site activity transfers will essentially be complete by September 30, 1995. The FY 1996 efforts will focus on remaining activity transfers and qualifying production capability at the receiver sites.

The nonnuclear consolidation project has been rebaselined to incorporate the latest management decisions to replace the Cap Assembly with the Acorn technology in support of reservoir production; as well as the decision to cease production operations at the Oxnard facility at the end of FY 1995, after completing a ten year prebuild effort. Management decisions not to accelerate the transfer of activities from Mound to Savannah River have also been incorporated in the rebaseline.

IV. Preface: Tritium Source

The plan to achieve Complex-21 originally called for a Secretarial Record of Decision (ROD) in late FY 1993 to define the future complex. A Programmatic Environmental Impact Statement (PEIS) was initiated in 1991 to analyze the environmental consequences of alternative configurations for the Complex as required by the National Environmental Policy Act. Due to rapidly changing defense requirements, in late 1992 the target date for the ROD was revised to FY 1995.

During the past year, the Reconfiguration program has been reevaluated with significant changes made to its scope. Last fall, the Department conducted a series of public scoping meetings and a comment period to receive input on changes to the reconfiguration proposal. Prior to that time, the Department had planned to analyze, in the Reconfiguration PEIS, alternative sites at which to relocate weapons complex functions, including new plutonium and uranium/lithium component fabrication facilities, new assembly/disassembly/high explosive facilities, and a new tritium source. As a result of the input received from stakeholders, the lack of new weapons requirements for the foreseeable future, and pressing budget priorities, last fall the Department decided to separate the Reconfiguration PEIS into two separate analyses and prepare two PEISs, one for Tritium Supply and Recycling and one for Stockpile Stewardship and Management. In addition, the Secretary initiated a new Nuclear Materials Disposition Project within the Department to study alternatives for the storage and/or disposition of fissile materials. Because decisions regarding storage and disposition of these materials are closely linked, the alternatives for storage of plutonium and uranium will now be evaluated in a separate Nuclear Materials Storage and Disposition PEIS, which the Department intends to complete in mid-1996, rather than in the Reconfiguration PEIS.

The Tritium Supply and Recycling PEIS will evaluate the following four technologies for a new tritium production facility: Heavy Water Reactor, Modular High Temperature Gas-Cooled Reactor, Advanced Light Water Reactor, and a Particle Accelerator. The candidate sites being examined for the new tritium facilities are the Savannah River Site, the Idaho National Engineering Laboratory, the Oak Ridge Reservation, the Nevada Test Site and the Pantex Plant. The Department will publish a Draft PEIS for public review and comment no later than March 1, 1995. The PEIS will also evaluate the potential for using a single reactor to produce tritium, dispose of plutonium and generate electricity; as well as evaluate the option of purchasing an existing commercial light water reactor for tritium production. The Draft PEIS will contain the Department's preferred alternative. The Department expects to have a Record of Decision regarding these facilities in November 1995.

Funding is included in the FY 1996 request for implementation of the November 1995 ROD. This funding will be used to initiate a project to provide a new assured tritium source, either a reactor or an accelerator. This funding may also be used, in part, to initiate a light water tritium target development program to protect the contingency option of using existing light water reactors to make tritium. Funding will also support the establishment of a Project Office to manage implementation of the Secretarial ROD.

7. Preface: Materials Surveillance and Technical Support

The FY 1996 budget request merges the Materials Surveillance and Technical Support program activities (formerly funded by the Materials Support Program Decision Unit) with the Weapons Stockpile Management Decision Unit due to the pending transfer of the Savannah River Site landlord responsibilities, site operations, and funding to the Office of the Assistant Secretary for Environmental Restoration and Waste Management (EM). The remaining Defense Programs materials surveillance and technical support mission within the now defunct Materials Support decision unit are transferred to the Office of the Deputy Assistant Secretary for Military Application and Stockpile Support.

FY 1996 will continue support for MK-42 shipments and operations at the Pacific Northwest Laboratory (PNL), and MK-42 chemical processing at the Oak Ridge National Laboratory (ORNL) to recover Pu-242, Am-243, and Cm-244. The fabrication and shipment of CF-252 neutron sources will also continue at ORNL. High priority is given to Environment, Safety and Health and Quality Assurance activities.

The Y-12 Plant will continue the recovery and handling of highly enriched uranium from the Central Scrap Management Office receipts and backlog. A contract with Babcock and Wilcox, through the Oak Ridge Operations Office, will be continued to reduce the backlog of scrap at Y-12.

This program supports safety and safeguards/security oversight activities. These activities include development of policy; review and evaluation of existing programs; upgrades as recommended due to life cycle needs, mission changes, or technology advances; compliance requirements; and the cost-effectiveness of overall program and/or proposals.

The materials surveillance portion of the budget primarily funds the storage, handling, shipping, receiving, safeguarding, control, and accountability, for surplus Defense Programs nuclear materials located at former Defense Programs facilities that have been transferred to Environmental Management at the Fernald, Hanford, and Idaho National Engineering Laboratory sites. The materials surveillance budget also funds (1) shipping, receiving, accountability, storage, and processing at the Los Alamos National Laboratory (LANL) of plutonium-239/beryllium neutron sources returned from education institutions and other government agencies; and (2) the operation of the Uranium-233 Storage and Distribution Center located at the Oak Ridge National Laboratory.

<u>Performance Goals and Indicator Elements for FY 1996</u>

- o Continue to store, ship, receive, safeguard, control, and account, for DP nuclear materials at former DP facilities that have been transferred to EM.

- o Continue to process/stabilize/deliver material at LANL and ORNL.

II. A. Summary Table: Stockpile Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
A. Core Stockpile Management				
1. Operating Expense				
a. Weapons Maintenance and Support				
Weapons Programs	$ 157,980	$ 161,410	$ 168,240	$ 6,830
Production Support	255,270	206,490	237,440	30,950
Material Recycle and Recovery	38,270	26,470	30,250	3,780
Production Capability Assurance Program	41,750	35,250	28,030	-7,220
Subtotal, a. Weapons Maintenance and Support	$ 493,270	$ 429,620	$ 463,960	$ 34,340
b. Environment, Safety, and Health				
Environment	$ 27,890	$ 32,080	$ 30,280	$ -1,800
Waste Management	10,690	8,360	8,910	550
Health and Safety	93,900	97,498	106,518	9,020
Subtotal, b. Environment, Safety, and Health	$ 132,480	$ 137,938	$ 145,708	$ 7,770
c. Safeguards and Security	$ 119,850	$ 117,570	$ 119,380	$ 1,810
d. Utilities, Plant Engineering, and Maintenance				
Site Planning and Project Management	50,580	46,050	46,720	670
Utilities	54,120	49,800	51,170	1,370
Maintenance	127,400	132,010	131,800	-210
Subtotal, d. Utilities, Plant Engineering, and Maintenance	$ 232,100	$ 227,860	$ 229,690	$ 1,830
e. Management and Administration	$ 241,526	$ 258,463	$ 267,285	$ 8,822
f. Other Costs				
Safe Secure Transportation	83,840	85,000	88,000	3,000
Federal Support	140,863	110,240	151,487	41,247
Other Funding	0	0	0	0
Subtotal, f. Other Costs	$ 224,703	$ 195,240	$ 239,487	$ 44,247
Subtotal, 1. Operating Expense	$ 1,443,929	$ 1,366,691	$ 1,465,510	$ 98,819
2. Capital Equipment				
a. Basic Equipment	$ 11,636	$ 19,680	$ 18,240	$ -1,440
b. Stockpile Support Computers	0	0	5,950	5,950
Subtotal, 2. Capital Equipment	$ 11,636	$ 19,680	$ 24,190	$ 4,510

II. A. Summary Table: Stockpile Management - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
3. Construction				
a. Facilities Capability Assurance Program				
88-D-122, FCAP, VL	$ 27,100	$ 14,820	$ 8,660	$ -6,160
Subtotal, a. Facilities Capability Assurance Program	$ 27,100	$ 14,820	$ 8,660	$ -6,160
b. Production Support Facilities				
95-D-123, Replacement Transportation Safeguards Division Aviation Facility, Albuquerque	$ 0	$ 2,000	$ 0	$ -2,000
Subtotal, b. Production Support Facilities	$ 0	$ 2,000	$ 0	$ -2,000
c. General Plant Projects				
GPD-121, General Plant Projects, VL	$ 7,700	$ 1,000	$ 10,000	$ 9,000
Subtotal, c. General Plant Projects	$ 7,700	$ 1,000	$ 10,000	$ 9,000
d. Environment, Safety, and Health				
96-D-122, Sewage Treatment Quality Upgrade, PX	$ 0	$ 0	$ 600	$ 600
96-D-123, Retrofit HVAC and Chillers, Y-12	0	0	3,100	3,100
95-D-122, Sanitary Sewer Upgrades, Y-12 Plant	0	2,200	6,300	4,100
94-D-124, Hydrogen Fluoride Supply System, Y-12 Plant	5,000	6,300	8,700	2,400
94-D-125, Upgrade Life Safety, KC Plant	1,000	1,000	5,500	4,500
94-D-127, Emergency Notification System, PX Plant	1,000	1,000	2,000	1,000
94-D-128, ES&H Analytical Laboratory, PX	800	1,000	4,000	3,000
93-D-122, Life Safety Upgrades, Y-12 Plant	5,000	5,000	7,200	2,200
92-D-126, Replace Emergency Notification System, VL	10,500	0	0	0
85-D-113, Power Plant and Distribution System, PX Plant	500	0	0	0
85-D-121, Air and Water Pollution Control Facility, Y-12 Plant	3,000	0	0	0
Subtotal, d. Environment, Safety, and Health	$ 26,800	$ 16,500	$ 37,400	$ 20,900

II. A. Summary Table: Stockpile Management - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
e. Safeguards and Security				
88-D-123, Security Enhancements, Pantex....	$ 20,000	$ 15,000	$ 13,400	$ -1,600
Subtotal, e. Safeguards and Security	$ 20,000	$ 15,000	$ 13,400	$ -1,600
Subtotal, 3. Construction	$ 81,600	$ 49,320	$ 69,460	$ 20,140
Use of Prior Year Balances.....	$ -313,141	$ -45,287	$ -58,444	$ -13,157
Subtotal, A. Core Stockpile Management	$ 1,224,024	$ 1,390,404	$ 1,500,716	$ 110,312
B. Radiological/Nuclear Accident Response				
1. Operating Expenses.....	$ 56,371	$ 60,954	$ 61,910	$ 956
2. Capital Equipment.....	9,024	8,100	8,100	0
3. Construction				
96-D-125, Washington Measurements Operations Facility, Andrews AFB, MD.....	0	0	900	900
Subtotal, 3. Construction	$ 0	$ 0	$ 900	$ 900
Subtotal, B. Radiological/Nuclear Accident Response	$ 65,395	$ 69,054	$ 70,910	$ 1,856
C. Reconfiguration				
1. Operating Expense				
a. Program Direction.....	$ 4,065	$ 3,695	$ 0	$ -3,695
b. Program Support.....	56,430	11,576	0	-11,576
c. Consolidation of Nonnuclear Facilities....	60,600	79,000	80,000	1,000
d. Reconfiguration of Nuclear Facilities.....	3,386	0	0	0
e. Tritium Production.....	10,000	0	0	0
Subtotal, 1. Operating Expense	$ 134,481	$ 94,271	$ 80,000	$ -14,271
2. Construction				
93-D-123, Complex 21, Various Locations 93-1, Consolidation of Nonnuclear Facilities.....	$ 25,000	$ 58,000	$ 41,065	$ -16,935
Subtotal, 93-D-123, Complex 21, Various Locations	$ 25,000	$ 58,000	$ 41,065	$ -16,935
Subtotal, 2. Construction	$ 25,000	$ 58,000	$ 41,065	$ -16,935

II. A. Summary Table: Stockpile Management - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Use of Prior Year Balances	$ -41,000	$ -6,765	$ 0	$ 6,765
Subtotal, C. Reconfiguration	$ 118,481	$ 145,506	$ 121,065	$ -24,441
D. Tritium Source				
1. Operating Expense	$ 0	$ 0	$ 50,000	$ 50,000
Subtotal, D. Tritium Source	$ 0	$ 0	$ 50,000	$ 50,000
E. Materials Surveillance and Technical Support				
1. Operating Expense	$ 119,502	$ 101,558	$ 104,748	$ 3,190
2. Capital Equipment	1,785	1,000	1,000	0
3. Construction	950	0	0	0
Use of Prior Year Balances	$ -6,000	$ 0	$ 0	$ 0
Subtotal, E. Materials Surveillance and Technical Support	$ 116,237	$ 102,558	$ 105,748	$ 3,190
Total, Stockpile Management	$ 1,524,137	$ 1,707,522	$ 1,848,439	$ 140,917

II.B. Laboratory and Facility Funding Table: Stockpile Management

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE			
KANSAS CITY PLANT-ALLIED SIGNAL	$ 322,526	$ 284,544	$ 284,740
LOS ALAMOS NATIONAL LABORATORY-U OF CALIFORNIA	129,453	119,397	152,352
MOUND PLANT-BG&G TECHNOLOGIES	3,802	4,293	0
PANTEX PLANT-MASON & HANGER	236,450	252,410	270,920
PINELLAS PLANT-MARTIN MARIETTA SPEC. COMP.	4,373	5,075	0
ROCKY FLATS PLANT-EG&G ROCKY FLATS	54,155	51,253	46,000
SANDIA CORP.-MARTIN MARIETTA	167,595	197,880	203,872
ALBUQUERQUE OPERATIONS OFFICE	198,173	191,544	208,438
SUBTOTAL, ALBUQUERQUE	$1,116,527	$1,106,396	$1,166,322
OAK RIDGE OPERATIONS OFFICE	$ 445,844	$ 377,010	$ 392,949
CHICAGO OPERATIONS OFFICE	$ 16,860	$ 13,274	$ 2,517
SAVANNAH RIVER OPERATIONS OFFICE	$ 120,947	$ 126,222	$ 135,435
OAKLAND OPERATIONS OFFICE	$ 39,513	$ 30,378	$ 30,079
NEVADA OPERATIONS OFFICE	$ 33,538	$ 31,135	$ 14,325
RICHLAND OPERATIONS OFFICE	$ 22,914	$ 23,535	$ 23,024
IDAHO OPERATIONS OFFICE	$ 11,427	$ 11,347	$ 10,663
OTHER/HEADQUARTERS	$ 76,708	$ 40,277	$ 131,569
SUBTOTAL	$1,884,278	$1,759,574	$1,906,883
LESS: ADJUSTMENTS			
- USE OF PRIOR YEAR BALANCES	- 360,141	- 52,052	- 58,444
ADJUSTED TOTAL	$1,524,137	$1,707,522	$1,848,439

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Stockpile Management			
A. Core Stockpile Management			
1. Operating Expense			
a. Weapons Maintenance and Support			
Weapons Programs	This program category includes those activities directly related to the processing, fabrication, assembly, evaluation, maintenance, dismantlement, and disposal of nuclear weapons. The focus of this program activity in FY 1994 was evaluation, maintenance, and dismantlement. Continued support is provided for dismantlement of 1,369 weapons/warheads in FY 1994 and stockpile maintenance and surveillance activities for the enduring stockpile in accordance with the latest Department of Energy and Department of Defense coordinated stockpile guidance.	This program category includes those activities directly related to the processing, fabrication, assembly, evaluation, maintenance, dismantlement, and disposal of nuclear weapons. The focus of this program activity in FY 1995 continues to be evaluation, maintenance, and dismantlement. Increase of 2 percent from FY 1994 level. Increase is driven by inflation and higher dismantlement activities/costs at the Pantex Plant. Continued support is provided for dismantlement of (about 2,000 weapons/warheads) and stockpile maintenance and surveillance activities for the enduring stockpile in accordance with the latest Department of Energy and Department of Defense coordinated stockpile guidance.	This program category includes those activities directly related to the processing, fabrication, assembly, evaluation, maintenance, dismantlement, and disposal of nuclear weapons. The focus of this program activity in FY 1996 continues to be evaluation, maintenance, and dismantlement. Increase of 4 percent from FY 1995 level. Increase is driven primarily by escalation, development of the ACORN tritium reservoir at Savannah River, stockpile surveillance activity at Los Alamos and dismantlements at Pantex. These increases are partially offset by lower stockpile maintenance costs at Kansas City associated with the B-61 and B-83 programs. The FY 1996 funding supports the enduring stockpile requirements at the Kansas City, Pantex, Savannah River, and Y-12 Plants as well as stockpile management activities at the Los Alamos and Sandia National Laboratories. Continued support is provided for dismantlement of (about 2,000 weapons/warheads) and stockpile maintenance and surveillance activities for the enduring stockpile in accordance with the latest Department of Energy and Department of Defense coordinated stockpile guidance.

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
a. Weapons Maintenance and Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Programs (Cont'd)			Although the war reserve stockpile has been reduced approximately 50 percent since FY 1990, there is still a large enduring stockpile that requires constant surveillance, evaluation, and maintenance. Ongoing and planned stockpile activities include replacement of limited life components, reliability assessment, laboratory, and flight testing of warheads, component and materials, safety and control improvements, and other warhead repair and modification activities (see attached Table III.A.1).
	$ 157,980	$ 161,410	$ 168,240

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):

TABLE III.A.1

FY 1996 Congressional Budget Request
Core Stockpile Management

The following table identifies the Weapons Program's direct expenses by major Core Stockpile Management activity for those warheads in the enduring stockpile.*

Direct Expenses	FY 1994	FY 1995 Amended Request	FY 1996 Request
Maintenance	$ 57,650	$ 63,070	$ 60,370
Evaluation	58,090	48,380	54,810
Dismantlement	42,240	49,960	53,060
Total Weapons Program	$157,980	$161,410	$ 168,240

* Based on Production and Planning Directive (P&PD) 94-2, which is change 2 to the FY 1994 - FY 1999 Nuclear Weapons Stockpile Plan approved by the President.

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
a. Weapons Maintenance and Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Production Support	This program category provides service that supports the mission objectives of the weapons program and the Production Capability Assurance Program, and includes quality supervision and control; production supervisor and control; production and field engineering; facility startup and standby; and other mission support to direct program activities. Reflects an overall decrease from FY 1993 level. The decrease is driven by reductions at Savannah River Plant where startup costs for the Replacement Tritium Facility were phasing down. However, there was an increase at the Y-12 Plant where higher costs were incurred to put measures in place to improve the control of operations and facilities, and at Kansas City and Sandia in preparation for receipt of nonnuclear reconfiguration activities. The major thrust of this program is to downsize and maintain only minimum ability to address stockpile problems/upgrades due to reduced production, manufacturing, quality control, engineering activities, engineering supervision and control.	Decrease of 19 percent from FY 1994 level. This reduction is driven by significant reductions at the Savannah River plant where startup activities for the Replacement Tritium facility were completed in FY 1994, and at the Y-12 plant where cost savings are expected to be achieved based on reduced plant activities. Decrease also occurs at the Kansas City Plant where manpower is temporarily reassigned to the Reconfiguration Program. Decrease in this program is partially offset by an increase at Pantex which is attributable to continued implementation of measures to improve and upgrade the control of operations and facilities.	Increase of 15 percent from FY 1995 level. This is driven by increases at Kansas City, Sandia, and Los Alamos National Laboratories. The Kansas City and Sandia increases are due to the need to support nonnuclear reconfiguration activities transferred to these receiver sites. The Los Alamos increased activities are associated with the transfer of mission responsibilities from the Mound and Rocky Flats plants and expanded efforts to implement expanded conduct of operations measures.
	$ 255,270	$ 206,490	$ 237,440

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expenses (Cont'd):
a. Weapons Maintenance and Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Material Recycle and Recovery	This program category includes activities associated with recycle and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components (LLC), and dismantlement of weapons and components. Reflects a decrease from the FY 1993 level. Increase occurs at the Savannah River Tritium Facilities and at the Y-12 Plant. The increase results from processing of greater amounts of materials from increased disposal activities and expanded efforts in technology development and exchange activities.	Reflects a 31 percent decrease from the FY 1994 level. Decrease is at Los Alamos National Laboratory and at the Y-12 and Savannah River Plants. This is related to reduced activities involving tritium, plutonium, and uranium recovery and inventory reduction.	Reflects a 14 percent increase from the FY 1995 level. The increase is entirely at the Los Alamos National Laboratory which is expanding its mission activities in the areas of plutonium and uranium technology development, and increased activity to process and repackage plutonium residues.
	$ 38,270	$ 26,470	$ 30,250

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
a. Weapons Maintenance and Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Production Capability Assurance Program	The Production capability Assurance Program (PCAP) activities are focused on maintaining a viable nuclear capability in the absence of explicit Department of Defense requirements for the production of new nuclear weapons. This has become one of the biggest challenges facing Defense Programs. This program also supports technology development activities to eliminate or minimize waste generation and workplace hazards anticipated from performance of assigned missions. The FY 1994 level reflects a decrease from FY 1993. The decrease, which is driven by reduced PCAP programs at the Kansas City, Savannah River, and Y-12 Plants, is partially offset by small increases at the Pantex Plant.	The FY 1995 level reflects a 16 percent decrease from FY 1994 driven by reduced programs at the Kansas City, Savannah River, and Y-12 Plants. This decrease reflects a constrained budget, the refinement of minimum critical key processes, and the ongoing downsizing of the weapons complex. Maintaining a viable nuclear capability in the absence of explicit Department of Defense requirements for the production of new nuclear weapons is one of the biggest challenges facing Defense Programs. This capability is being sustained through PCAP, which also supports technology development activities to eliminate or minimize waste generation and workplace hazards anticipated from performance of assigned missions.	The FY 1996 level reflects a 20 percent decrease from FY 1995. The FY 1996 level funds PCAP activities at a level necessary to maintain the appropriate technologies and processes to support the enduring stockpile and dismantlement. The program is being redefined based on reduced budget, increased readiness of production capability at the laboratories, better understanding of minimum capabilities at the plants and changes to underlying assumptions present at the start of PCAP. Maintaining a viable nuclear capability in the absence of explicit Department of Defense requirements for the production of new nuclear weapons is one of the biggest challenges facing Defense Programs. This capability is being sustained through PCAP, which also supports technology development activities to eliminate or minimize waste generation and workplace hazards anticipated from performance of assigned missions.
	$ 41,750	$ 35,250	$ 28,030
Subtotal, a. Weapons Maintenance and Support	$ 493,270	$ 429,620	$ 463,960

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
b. Environment, Safety, and Health

Program Activity	FY 1994	FY 1995	FY 1996
b. Environment, Safety, and Health			
Environment	This program category supports activities associated with environmental protection and technologies that are part of the core stockpile management mission. This category contains three major subprograms 1) auditing and evaluation, 2) effluent and environmental monitoring and surveillance, and 3) permitting. Decrease from FY 1993 level. The decrease is attributable to the decrease in costs at the Y-12 Plant resulting from reduced operations and facility consolidation and downsizing. The complex maintains and meets currently identified base environmental program requirements. Pantex reflects an increase of costs for expanded air and water monitoring for permit preparation.	Increase of 15 percent from FY 1994 level. The increase is primarily attributable to activity at the Pantex Plant and its ongoing site wide environmental impact statements activities. The Complex maintains and meets currently identified base environmental program requirements.	Decrease of 6 percent from FY 1995 level. Decrease is attributable to the completion of tiger team findings relative to asbestos cleanup. The remaining Complex will maintain and meet currently identified base environmental program requirements.
	$ 27,890	$ 32,080	$ 30,280

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expenses (Cont'd):
b. Environment, Safety, and Health (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
Waste Management	This program category supports refuse collection, handling, removal, and disposal and plant sanitation activities. It also supports pollution prevention opportunity assessments. Decrease from FY 1993 level. Continues ongoing activities and initiatives from FY 1993. The decrease is attributable to reduced activity at the Kansas City and Y-12 Plants where there is a reduced workload and a shrinking plant footprint.	Decrease of 22 percent from FY 1994, largely at the Kansas City and Y-12 Plants where waste generation activities continue to decline based on reduced workload, smaller footprint, and fewer employees.	Increase of 7 percent from FY 1995 level, which is attributable to inflation and minimal real growth at the Pantex and Savannah River Plants.
	$ 10,690	$ 8,360	$ 8,910

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
b. Environment, Safety, and Health (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
Health and Safety	This program category supports those activities required for industrial hygiene, radiological protection, occupational medicine, safety and fire protection, and internal plant site emergency management. Decrease from FY 1993 level of effort driven largely by decrease at the Y-12 Plant. The decrease at the Y-12 Plant is tied to reduced operations and plant consolidation. This program supports activities to satisfy known legal compliance requirements; sustains radiological control upgrades required by DOE Order 5480.11, and T&A findings; supports reduction/elimination of industrial hygiene and radiological protection vulnerabilities identified by the Tiger Teams; provides for DOE Order 5480.15, accreditation and ALARA dose reduction efforts. Continues offsite dose reconstruction and risk characterization (beryllium workers), managed by the Office of Environment, Safety and Health.	Increase of 4 percent from FY 1994 level driven primarily by inflation and expanded conduct of operations activities at the Los Alamos National Laboratory. The Health program supports activities to satisfy known legal compliance requirements; sustains radiological control upgrades required by DOE Order 5480.11, and T&A findings; supports reduction/elimination of industrial hygiene and radiological protection vulnerabilities identified by the Tiger Teams; provides for DOE Order 5480.15, accreditation and ALARA dose reduction efforts; responds to Defense Nuclear Facilities Safety Board recommendations. Continues offsite dose reconstruction and risk characterization (beryllium workers), managed by the Office of Environment, Safety and Health. Program continues to supports fire protection, industrial and occupational safety, nuclear facility safety, facility safety design, and risk assessment requirements.	Increase of 9 percent from FY 1995 level, which is driven by inflation and real growth at the Pantex and Savannah River Plants and at the Los Alamos National Laboratory. The remaining complex continues to maintain and meet currently identified health and safety program requirements. The Health program supports activities to satisfy known legal compliance requirements; sustains radiological control upgrades required by DOE Order 5480.11, and T&A findings; supports reduction/elimination of industrial hygiene and radiological protection vulnerabilities identified by the Tiger Teams; provides for DOE Order 5480.15, accreditation and ALARA dose reduction efforts; responds to Defense Nuclear Facilities Safety Board recommendations. Continues offsite dose reconstruction and risk characterization (beryllium workers), managed by the Office of Environment, Safety and Health. Program continues to supports fire protection, industrial and occupational safety, nuclear facility safety, facility safety design, and risk assessment requirements.
Health and Safety	$ 93,900	$ 97,498	$ 106,518
Subtotal, b. Environment, Safety, and Health	$ 132,480	$ 137,938	$ 145,708

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
c. Safeguards and Security

Program Activity	FY 1994	FY 1995	FY 1996
c. Safeguards and Security	This program category provides personnel and operating cost for nuclear materials control and accountability activities, physical security, computer security, detection and electronic access control systems, and personnel security assurance activities. Decrease from FY 1993 level, continues ongoing activities and initiatives from FY 1993 including providing funds for safeguarding and surveillance of Defense Programs (DP) special nuclear materials at the Rocky Flats Plant.	Decrease of 2 percent from FY 1994 level. This decrease is primarily attributable to reduction in costs at the Y-12 plant resulting from reduced operations, plant downsizing, and consolidation. Defense Programs continues to fund safeguarding and surveillance of special nuclear materials at the Rocky Flats plant.	Increase of 2 percent from FY 1995 level. This increase is primarily attributable to inflation. Defense Programs continues to fund safeguarding and surveillance activities at the Rocky Flats plant for special nuclear materials.
	$ 119,850	$ 117,570	$ 119,380

III. Stockpile Management (Cont'd):

A. Core Stockpile Management (Cont'd):

1. Operating Expense (Cont'd):

d. Utilities, Plan Engineering, and Maintenance (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
Utilities	This program category supports activities required to provide electricity, fuels, water, sewer, and utility support services in support of plant operations. It also includes engineering and maintenance related to utility systems. Decrease from FY 1993 level. Decrease is driven by savings in utility operations and procured utility services resulting from infrastructure downsizing, energy conservation and implementation of competitively bid utility contracts. $ 54,120	Decrease of 8 percent from FY 1994. Decrease is driven entirely by lower costs at the Y-12 plant. Reduced operations, infrastructure and site footprint downsizing result in reduced procured utility services. $ 49,800	Overall increase of 3 percent from FY 1995 level. This is due largely to inflation and a higher institutional cost allocation at the Los Alamos National Laboratory for this category of expense. $ 51,170

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
d. Utilities, Plan Engineering, and Maintenance

Program Activity	FY 1994	FY 1995	FY 1996
d. Utilities, Plant Engineering, and Maintenance			
Site Planning and Project Management	This program category includes engineering and engineering support for general plant projects, master site planning, facilities assessments, value engineering, cost/schedule control, utility engineering, energy management, configuration control, and general engineering and management. Overall decrease from FY 1993 level. Vital activities needed to ensure meeting stockpile requirements and ES&H compliance were supported at all sites. This includes engineering support of maintenance, configuration management, conceptual design, facility planning, DOE Order 4330.4A, Maintenance Management Order compliance, and backlog reduction activity. Support of plant downsizing and consolidation and rearrangement activities continued.	Overall decrease of 9 percent from FY 1994 level. Vital activities needed to ensure meeting stockpile requirements and ES&H compliance are supported at all sites. This includes engineering support of maintenance, configuration management, conceptual design, facility planning, DOE Order 4330.4A, Maintenance Management Order compliance, and backlog reduction activity. The Y-12 Plants initiative to reduce the site's footprints by shutting down non-mission facilities for decontamination/decommission continues. Configuration management and control activities to support the integrity of the critical facilities safety systems at Pantex also continues.	Overall increase of 1 percent from FY 1995 level. This increase is less than inflation. Vital activities needed to ensure meeting stockpile requirements and ES&H compliance will be supported at all sites. This includes engineering support of maintenance, configuration management, conceptual design, facility planning, DOE Order 4330.4A, Maintenance Management Order compliance, and backlog reduction activity.
	$ 50,580	$ 46,050	$ 46,720

Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
d. Utilities, Plan Engineering, and Maintenance (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
Maintenance	This program category supports manufacturing related maintenance, equipment maintenance, facilities maintenance, and plant maintenance. These activities include equipment setup/installation, calibration, and modification; building rearrangement and office moves and modifications; electrical, mechanical and carpeting activities, and roads and grounds maintenance. Decrease from FY 1993 level. Supports corrective, general facilities, safety and security maintenance with preventive maintenance supported at a minimum level. Reduced level of activity in this program is reflected at most sites with the Y-12 Plant having the more significant reduction. Maintenance on equipment and facilities expected to remain part of the long-term complex were emphasized.	Overall increase of 4 percent from FY 1994 level which is basically inflation. Supports corrective, general facilities, safety and security maintenance with preventive maintenance supported at a minimum level. Maintenance on equipment and facilities expected to remain part of the long-term complex will be emphasized.	Overall costs are flat with the FY 1995 level. Supports corrective, general facilities, safety and security maintenance with preventive maintenance supported at a minimum level. The overall level of activity in this program is expected to continue but could be influenced by completing portions of nonnuclear reconfiguration and an effort to upgrade the infrastructure of the remaining complex plants. Maintenance on equipment and facilities expected to remain part of the long-term complex will be emphasized.
	$ 127,400	$ 132,010	$ 131,800
Subtotal, d. Utilities, Plant Engineering, and Maintenance	$ 232,100	$ 227,860	$ 229,690

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
e. Management and Administration

Program Activity	FY 1994	FY 1995	FY 1996
e. Management and Administration	This program category supports those activities associated with general management and administrative functions. This would include information outreach/services, taxes, human resources, executive and financial management, procurement, legal, logistic/administrative support, quality assurance, fees, and laboratory directed research and development. Decrease from the FY 1993 level. Overall, decrease was primarily driven by budget constraints and downsizing efforts. Management and Administration program activities was partially funded by carryover from FY 1993 and prior years.	Increase of 7 percent from the FY 1994 level. In addition to inflation, another driver is higher costs at the Pantex plan and the Sandia National Laboratories. Cost drivers at the Pantex are largely associated with quality assurance/training/conduct of operations activities while the Sandia increase is a result of a higher institutional allocations.	Overall increase of 3 percent from the FY 1995 level which equates to inflation. The program will continue to support the base management and administration functions at the minimum level to accomplish the Defense Programs mission and provide the necessary services required to maintain the remaining complex's infrastructure.
	$ 241,526	$ 258,463	$ 267,285

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
f. Other Costs

Program Activity	FY 1994	FY 1995	FY 1996
f. Other Costs			
Safe Secure Transportation	This program category supports activities for transporting weapons, weapons components, and materials from Department of Energy plants and storage sites or other final destinations. It includes a secure communications network, transportation vehicles, and required personnel to operate the system. It also certified containers and packaging systems specially designed to transport its product. Increases over FY 1993 were driven by inflation and higher fleet maintenance costs, and the continued high level of movement on the ground of weapons, weapons components and materials consistent with the current Nuclear Weapons Stockpile Plan.	Supports a constant level of effort from FY 1994 based on a continuing high level of movement on the ground of weapons, weapons components and materials consistent with the current Nuclear Weapons Stockpile Plan.	Increase is based on escalation and supports a constant level of effort from FY 1994 based on a continuing high level of movement on the ground of weapons, weapons components and materials consistent with the current Nuclear Weapons Stockpile Plan.
	$ 83,840	$ 85,000	$ 88,000

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
1. Operating Expense (Cont'd):
f. Other Costs (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
Federal Support	This program category supports the activities of the Albuquerque, Oak Ridge, and Savannah River Operations Offices, and various area offices. It includes funds for general management; executive direction; general supervision of program operations; negotiations and administration of operating contractors and other procurements. Weapons complex resource management and planning; technical oversight and review; conduct of special programs; and program costs for federal salaries, personnel services/benefits, travel, training, and supplies and support services to conduct operations at various operations, area, and project offices. Decrease from the FY 1993 level. This was primarily driven by the fact that final payment against the Monsanto health insurance settlement was made in FY 1993. The Federal work force was downsized to reflect decreases in traditional mission areas.	Decrease of 22 percent from the FY 1994 level. This is primarily driven by reduced costs at the Albuquerque and Oak Ridge Operations Offices. Savings have been achieved in lower support service contractor activity and lower Albuquerque special projects efforts. FY 1995 also reflects a general reduction and procurement reform savings totaling $12.7 million, which has been assigned to the Federal Support Program pending FY 1995 budget execution activities. Also, the federal work force is being downsized to reflect decreases in traditional mission areas. Federal Support program activities in FY 1995 will be partially funded by carryover from FY 1994.	Increased 37 percent from FY 1995 level. This increase includes inflation but is driven primarily by increased support by the Lawrence Livermore National Laboratory in the areas of weapons dismantlement, flight testing, and plutonium casting technology, and by a special project at Albuquerque. This project initiates the engineering/procurement and fabrication of plutonium pit storage containers for use at the Pantex Plant. Increase is also the reflection of applying FY 1995 congressional reduction against this program, which will be supported in FY 1995 by prior year uncosted balances.
	$ 140,863	$ 110,240	$ 151,487
Other Funding	$ 0	$ 0	$ 0
Subtotal, f. Other Costs	$ 224,703	$ 195,240	$ 239,487
Subtotal, 1. Operating Expense	$ 1,443,929	$ 1,366,691	$ 1,465,510

Table III.A.2

III. Stockpile Management (Cont'd)
A. Core Stockpile Management (Cont'd)

Set forth below is a summary table detailing FY 1996 and FY 1995 operating costs by site and functional activity for Core Stockpile Management Program.

FY 1996

SUMMARY CATEGORIES	Kansas City	Los Alamos	Pantex	Rocky Flats	Sandia	Savannah River	Y-12	Albuquerque & Headquarters	Total
Weapons Maintenance & Support	96,750	60,300	76,020	0	113,140	38,270	79,480		463,960
Environment, Safety, & Health	7,990	16,400	44,750	1,290	4,890	17,350	50,150	2,888	145,708
Safeguards & Security	6,130	9,500	28,120	38,310	2,670	4,810	29,840		119,380
Utilities, Site Planning & Maintenance	60,270	6,000	41,050	1,730	6,530	30,630	83,480		229,690
Management & Administration	68,860	22,800	50,060	4,670	28,770	13,075	79,050		267,285
Safe Secure Transportation	0	0	0	0	0	0	0	88,000	88,000
Federal Support	0	0	0	0	0	6,650	8,000	136,837	151,487
Total, FY 1996	240,000	115,000	240,000	46,000	156,000	110,785	330,000	227,725	1,465,510

FY 1995

SUMMARY CATEGORIES	Kansas City	Los Alamos	Pantex	Rocky Flats	Sandia	Savannah River	Y-12	Albuquerque & Headquarters	Total
Weapons Maintenance & Support	100,760	46,400	73,630	0	99,470	33,180	76,180		429,620
Environment, Safety, & Health	7,820	13,100	41,170	1,290	6,680	15,050	50,140	2,688	137,938
Safeguards & Security	5,830	9,400	27,100	38,300	2,400	4,700	29,840		117,570
Utilities, Site Planning & Maintenance	61,490	5,000	38,680	1,730	6,150	31,320	83,490		227,860
Management & Administration	68,100	19,100	49,420	3,180	26,300	13,313	79,050		258,463
Safe Secure Transportation	0	0	0	0	0	0	0	85,000	85,000
Federal Support	0	0	0	0	0	6,500	8,000	95,740	110,240
Total, FY 1995	244,000	93,000	230,000	44,500	141,000	104,063	326,700	183,428	1,366,691

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
2. Capital Equipment

Program Activity	FY 1994	FY 1995	FY 1996
2. Capital Equipment			
a. Basic Equipment	This funding level ($11,636) was a minimum level to replace obsolete and worn out equipment, to support stockpile maintenance, dismantlement activities, ES&H, pollution prevention, and S&S activities. The funding provided for high technology equipment, such as a scanning electron microscope, electron spectrometer, radiation chest counter, induction plasma unit, and stripper/airlock pump.	This funding level ($19,680) will provide some ability to replace obsolete and worn out equipment, to support stockpile maintenance, dismantlement activities, ES&H, pollution prevention, and S&S activities. The above funding includes the additional $7.3 million provided in the FY 1995 amendment.	This increased funding level ($24,190) follows two years of minimal funding in order to reduce large uncommitted balances, review dramatic mission changes, plan for plant closures, and provide necessary funding for high priority construction projects. Funding will provide for high technology equipment in support of stockpile maintenance, evaluation, and dismantlement activities. The National Laboratories have expanded their stockpile support activities through reconfiguration with the transfer of technologies and production processes that have to be sustained by Stockpile Management. In addition the program continues to support ES&H, Safeguards & Security and general plant support activities.
	$ 11,636	$ 19,680	$ 18,240
b. Stockpile Support Computers	Since no new budget authority is requested no new ADP equipment will be acquired.	The ADP equipment requested by the Stockpile Support contractors cannot be accommodated with the continued reduced funding level and DP's overall priorities.	Provides the following major items of ADP equipment: upgrades the Sensitive Unclassified General Purpose System, Kansas City Plant ($1,200); Focused Factory Phase 5, Kansas City Plant ($1,500); Mechanical CAD/CAM Migration #4, Kansas City Plant ($1,250); and Computer System Upgrade, Pantex Plant ($2,000).
	$ 0	$ 0	$ 5,950
Subtotal, 2. Capital Equipment	$ 11,636	$ 19,680	$ 24,190

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
3. Construction

Program Activity	FY 1994	FY 1995	FY 1996
3. Construction			
a. Facilities Capability Assurance Program			
88-D-122, FCAP, VL	$ 27,100	$ 14,820	$ 8,660
Subtotal, a. Facilities Capability Assurance Program	$ 27,100	$ 14,820	$ 8,660
b. Production Support Facilities			
95-D-123, Replacement Transportation Safeguards Division Aviation Facility, Albuquerque	$ 0	$ 2,000	$ 0
Subtotal, b. Production Support Facilities	$ 0	$ 2,000	$ 0
c. General Plant Projects			
GPD-121, General Plant Projects, VL	$ 7,700	$ 1,000	$ 10,000
Subtotal, c. General Plant Projects	$ 7,700	$ 1,000	$ 10,000
d. Environment, Safety, and Health			
96-D-122, Sewage Treatment Quality Upgrade, PX	$ 0	$ 0	$ 600
96-D-123, Retrofit HVAC and Chillers, Y-12	$ 0	$ 0	$ 3,100
95-D-122, Sanitary Sewer Upgrades, Y-12 Plant	$ 0	$ 2,200	$ 6,300
94-D-124, Hydrogen Fluoride Supply	$ 5,000	$ 6,300	$ 8,700

III. Stockpile Management (Cont'd):
A. Core Stockpile Management (Cont'd):
3. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
94-D-125, Upgrade Life Safety, EC Plant	$ 1,000	$ 1,000	$ 5,500
94-D-127, Emergency Notification System, PX Plant	$ 1,000	$ 1,000	$ 2,000
94-D-128, ES&H Analytical Laboratory, PX	$ 800	$ 1,000	$ 4,000
93-D-122, Life Safety Upgrades, Y-12 Plant	$ 5,000	$ 5,000	$ 7,200
92-D-126, Replace Emergency Notification System, VL	$ 10,500	$ 0	$ 0
85-D-113, Power Plant and Distribution System, FM Plant	$ 500	$ 0	$ 0
85-D-121, Air and Water Pollution Control Facility, Y-12 Plant	$ 3,000	$ 0	$ 0
Subtotal, d. Environment, Safety, and Health	$ 26,800	$ 16,500	$ 37,400
e. Safeguards and Security			
88-D-123, Security Enhancements, Pantex	$ 20,000	$ 15,000	$ 13,400
Subtotal, e. Safeguards and Security	$ 20,000	$ 15,000	$ 13,400
Subtotal, 3. Construction	$ 81,600	$ 49,320	$ 69,460
Use of Prior Year Balances	-$ 313,141	-$ 45,287	-$ 58,444
Subtotal, A. Core Stockpile Management	$ 1,224,024	$ 1,390,404	$ 1,500,716

III. Stockpile Management (Cont'd):
B. Radiological/Nuclear Accident Response
1. Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
1. Operating Expense	Emergency Response maintained DOE's technical and operational capabilities for responding to radiological accidents/incidents worldwide. Following are the most significant of FY 1994 activities and accomplishments. Aerial Measuring System (AMS) conducted 14 aerial measuring surveys of Federal, State, and private sector locations. A major survey was undertaken in providing assistance to the Kazakhstan in the Semi-Palitinsk region of the Former Soviet Union. Participated in exercise Diagram Jump. Atmospheric Release Advisory Capability (ARAC) continued to build a worldwide database to allow faster accumulation for forecasting and weather trends in various regions of the world. Several no-notice drills were conducted to provide the ARAC ability of disseminating dispersion models in the event of a radiological emergency and providing the information to decision makers in less than 14 minutes. Developed and refined the 3-D ARAC radiological dispersion predictor to a worldwide scale. Federal Radiological Monitoring and Assessment Center (FRMAC) participated in and conducted 12 interagency courses and workshops as an outreach initiative to assist State and local governments in developing an understanding of the Federal Emergency Response Assets and how they are prepared to assist during radiological accidents. Participated in Table Top exercise in Alaska. Provided support to exercise Diagram Jump. Nuclear Emergency Search Team (NEST) continued to enhance the search and detection capabilities for locating lost or stolen nuclear weapons utilizing technological interrogation of existing systems. Accomplishments included:	Emergency Response ensures the maintenance of DOE's technical and operational capabilities for responding to radiological accidents/incidents worldwide. Following are the projected activities for the identified Emergency Response Assets: Aerial Measuring Systems (AMS) provides airborne sensing capability for monitoring environmental impacts at major DOE and other Federal agency facilities, tracks plumes and maps radiation dispositions, and conducts routine surveys for the nation's nuclear facilities. The FY 1995 Activities scheduled for AMS are as follows: - Complete 18 site surveys to include Los Alamos National Laboratory, Radioactive Metals Inc. and Princeton Tokamac, Argonne National Laboratories, and Lawrence Livermore National Laboratory. - Complete upgrade to the navigation/positioning sensors and data systems for aerial surveys. - Continue to maintain an aerial radiological survey capability to respond to radiological and nuclear accidents or incidents. - Develop very high spatial resolution radiation mapping vehicle Atmospheric Release Advisory Capability (ARAC) supports DOE's centralized computer-based system that provides estimates of transport, diffusion, deposition of radioactive and other hazardous material released into the atmosphere, and dose projections. Planned activities for FY 1995 include: - Continue upgrade and collection of worldwide database information to provide immediate modeling capabilities.	Beginning in FY 1996 all accident response assets will be included in the Stockpile Management decision unit. Assets formerly funded with the Research and Development decision unit include the Nuclear Emergency Search Team, Federal Radiological Monitoring and Assessment Center, Aerial Measuring System, and the Atmospheric Release Advisory Capability. Radiological/Nuclear Accident Response will continue to ensure the maintenance of DOE's technical and operational capabilities for response to radiological accidents/incidents worldwide. The FY 1996 activities will include continued support of the emergency response assets. Additional funding above the FY 1995 level will provide for implementation of: an accident response full field exercise; continuation of technology integration for improved device and weapon search, detection, and recovery; upgrade and maintenance of deployment equipment and personnel support in the event of a nuclear accident or incident during a CONUS or OCONUS deployment. Various complements gained by the increased funding include: The emergency response assets will take the lead for DOE in a National level, DOE lead federal agent nuclear weapon accident field training exercise. Technology integration will be completed for the Portable Non-Destructive Evaluation System and remote Air Sampling Laboratory used to provide air sampling monitoring at the accident site. Radiation Emergency Assistance/Training Center (REAC/TS) will continue to provide 24 hour medical response capabilities for radiation accidents and support of emergency response training and exercises. The increase from the FY 1995 funding will allow maintenance of a 24-hour readiness

III. Stockpile Management (Cont'd):
B. Radiological/Nuclear Accident Response (Cont'd)
1. Operating Expense (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
1. Operating Expense (Cont'd)	- Four MAC II prototypes were built with 28 production units scheduled for completion by 9/30/94. - One NEST full field exercise was completed. - The Geographic Information System was integrated into the NEST search command and control. - Participated in an overseas table-top exercise on the resolution of a stolen nuclear weapon. - Completed training for 200 reserve NEST searchers to assist with the location of a lost or stolen nuclear device. Supported the FY 1992 initiative that identified current and projected requirements to enhance the emergency response capability of the Accident Response Group, which is the Department's primary emergency response asset for providing technical assistance to accidents or significant incidents involving nuclear weapons or nuclear weapon components. Enhancements to this one-of-a-kind program were necessary primarily due to an increased movement of nuclear disarmament initiatives. Requirements for ARG support in this area extend beyond the United States and its territories. Significant accomplishments include: provision of technical training to over 450 Federal, State, and local representatives on nuclear weapon accident response; development and revision of nuclear weapons recovery plans and procedures; development of a new Linear Accelerator/Radiographic Capability (LINAC) and man-portable Liquid Abrasive Cutter (LAC) technology; provision of technical assistance to Russia and several Former Soviet Union (FSU) countries in the development of radiological accident response capabilities; and participation in the full field exercise Diver Mist, and the	- Continue support of Federal, State, and local exercises, drills, and surveys. The Federal Radiological Monitoring and Assessment Center (FRMAC) supports DOE's lead role for establishing and managing the FRMAC as detailed in the Federal Radiological Monitoring and Assessment Plan required by the Federal Radiological Emergency Response Plan. Projected activities for FRMAC for FY 1995 include: - Participate in a no-notice operational emergency deployment readiness evaluation. - Participate in a major CONUS full field exercise. - Conduct one no-notice FRMAC Advance Party Exercise. - Conduct DOE Joint Regional Workshops in conjunction with the Nuclear Regulatory Commission and Federal Emergency Management Agency. - Conduct training and exercises to include: three FRMAC orientation courses; monitor and assessor training at the Nevada Test Site, and development of the FRMAC Key Leader Training. - Publish and finalize the following documentation: Evaluation and Assessment Manual; Monitoring and Analysis Manual; and FRMAC Director's Handbook. Nuclear Emergency Search Team (NEST) supports the operations, exercise and maintenance of DOE's specially training scientists, engineers, and technicians who provide technical assistance in responding to a threat by an individual or group to detonate a nuclear explosive or scatter nuclear materials. The NEST program: (1) conducts technology integration in containment and affects, disablement and	treatment decontamination facility for radiation victims. The increase will also allow the addition of a full-time staff physician to enhance the consultation medical/health physics team.

III. Stockpile Management (Cont'd):
B. Radiological/Nuclear Accident Response (Cont'd):
1. Operating Expenses (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
1. Operating Expenses (Cont'd)	Navy (CINCPAC) Command Post Exercise Diagram Jump. Provide REAC/TS with adequate funding for maintaining and enhancing the Department's capability to provide 24 hour medical advice, on site assistance, and training for the treatment of all types of radiation exposures, accidents, and/or incidents throughout the DOE complex and worldwide. Accomplishments follow: provision of training assistance to the World Health Organization on medical treatment for radiological contamination; participation in National and International workshops on radiation accidents and medical treatments; support NEST, ARG, and FRMAC during several exercises that included Exercise Diver Mist, and Exercise Porcupine; and provision of medical expertise to over 824 requests for assistance. Provides for continued operations of the Department's RAP program throughout the eight RAP regions. In compliance with DOE 5530.3, RAP provides technical first responder assistance for initially addressing an accident and incident involving radiological materials in support of the DOE complex, other Federal, State, Tribal, and Local government agencies. Radiological Assistance Program (RAP) provided 32 responses to requests for assistance from State and Local governments. Participated in 39 DOE, State, and local authority sponsored exercises. Continued to improve relationships with local authorities of the eight RAP regions via effective outreach and training symposiums.	diagnostics; (2) coordinates training programs; and (3) maintains the capability to respond through frequent exercises. Projected NEST FY 1995 activities include: - Participation in a major CONUS full field nuclear incident response exercise by September 30, 1995. - Continue to conduct training and qualification of NEST reserve volunteer searchers. - Continue development of enhancements to the current NEST capabilities for dealing with lost or stolen nuclear weapons or materials. Accident Response Group (ARG) supports DOE's resolution of accidents and significant incidents worldwide involving nuclear weapons that are in DOE and DOD custody at the time of the accident or incident. Planned activities for FY 1995 include: participation in a Navy Full Field exercise Display Select; completion of the technology integration of weapon shipping container, which will meet ES&H, transportation, and disposal requirements; completion of the construction of a mobile remote system with integrated audio visual capability and robotics manipulation to enhance safe recovery of nuclear weapons; continuation of efforts to develop effective health and safety capabilities to monitor, collect, analyze, and assess radiological, toxic and other hazardous materials; initiation of planning for the FY 1997 DOE custody full field exercise; participation in a no-notice operational emergency deployment readiness evaluation; and conduct of planning for the FY 1996 Air Force Command Post Exercise. The Radiation Emergency Assistance	

Program Activity	FY 1994	FY 1995	FY 1996
1. Operating Expense (Cont'd)		Center/Training Site (REAC/TS) provides DOE's medical and health physics support to radiological accidents and incidents. Support is provided via direct and consultative assistance which is recognized by the World Health Organization as the world collaboration Center for radiation accident management. The FY 1995 projected events include: continuation of 24 hour medical response capabilities for radiation accidents; presentation of the 4th in a series of international conferences. "The Medical Basis for Radiation Accident Preparedness: Focus on Patient Care." Development and refinement of cytogenic techniques for biological dose assessment; and conduct of quality assurance evaluation for emergency preparedness at DOE/DOE contractor sites, state and local medical response groups, and private industry (foreign and domestic). Radiological Assistance Program (RAP) provides for DOE's first responder assistance for initially addressing an accident or incident involving radiological materials in support of the DOE complex, other Federal, State, Tribal, and Local government agencies. Planned 1995 activities include: conduct of training exercises and drills to support transportation emergency and conduct of planning for the FY 1997 Cassinni Space Launch.	
	$ 56,371	$ 60,954	$ 61,910

III. Stockpile Management (Cont'd):
B. Radiological/Nuclear Accident Response (Cont'd):
2. Capital Equipment

Program Activity	FY 1994	FY 1995	FY 1996
2. Capital Equipment	Included funding to procure capital equipment to support the Radiological/Nuclear Accident Response Program. Examples of items include: Damaged Weapon Shipping Containers; Remote Air Sampling Equipment; Real Time Radiographic System; Global Positioning System (GPS) for Radiological Mapping; Non-Radiological Health and Safety Equipment; Sampling Collection and Preparation (Hot Spot); and Radiological Assistance Program Response Vehicle for Region 2 (TN).	Includes funding to procure capital equipment to support the Radiological/Nuclear Accident Response Program. Examples of items include: Damaged Weapon Shipping Containers; Remote Air Sampling Equipment; Real Time Radiographic System; Global Positioning System (GPS) for Radiological Mapping; Non-Radiological Health and Safety Equipment; Sampling Collection and Preparation (Hot Spot); and Radiological Assistance Program Response Vehicle for Region 2 (TN).	Includes funding to procure capital equipment to support the Radiological/ Nuclear Accident Response Program. Examples of items include: Communication equipment to support Nuclear Emergency Search Team deployment; Fabrication of the MiniMirs; HgI2 Detector Arrays to assist with analysis; Data Van upgrade equipment to support AMS deployment and analysis; Hyperspectral scanner system; Digital Photographic equipment to support AMS aerial imagery; Tracer Gas Sampling system; Radiological Assistance Program Response Vehicle Region 7 (ID); Foam Generating Equipment to assist dismantling capabilities; Portable HE Identification Equipment; Field Dispersal Prediction equipment to calculate risk assessment; Laboratory Disablement equipment; Access and Marine technology development equipment to ascertain threats into area ports; Washington Aerial Measurements Division Search and detection equipment and upgrades for enhancing search capability; and Mechanical/Electrical deployment equipment, including generators, forklift, and power roll.
	$ 9,024	$ 8,100	$ 8,100

III. Stockpile Management (Cont'd):
B. Radiological/Nuclear Accident Response (Cont'd):
3. Construction

Program Activity	FY 1994	FY 1995	FY 1996
3. Construction			
96-D-125, Washington Measurements Operations Facility, Andrews AFB, MD			Includes initial funding for the design and procurement of equipment for the replacement of the Washington Aerial Measurements Operations Facility, (Project 96-D-125, Washington Measurements Operations Facility, Andrews Air Force Base, MD.) The new replacement facility will be a secure two-story building at the Andrews Air Force Base to house personnel and equipment in support of the Radiological/Nuclear Accident Response program.
	$ 0	$ 0	$ 900
Subtotal, 3. Construction	$ 0	$ 0	$ 900
Subtotal, B. Radiological/Nuclear Accident Response	$ 65,395	$ 69,054	$ 70,910

III. Stockpile Management (Cont'd):
C. Reconfiguration
1. Operating Expense
a. Program Direction
b. Program Support

Program Activity	FY 1994	FY 1995	FY 1996
C. Reconfiguration			
1. Operating Expense			
a. Program Direction	Provided personnel costs for staff required to support and oversee continuation of the Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS) for a site and/or technology for a tritium source. Also supported staffing currently detailed to other offices within Defense Programs and the Surplus Fissile Materials Control and Disposition Project.	Provides personnel costs for staff required to support and oversee continuation of the Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS).	To be supported under Tritium Source.
	$ 4,065	$ 3,695	$ 0
b. Program Support	Included contract costs related to the planning and management for a tritium source through the preconceptual design phase. FY 1994 activities included headquarters technical/administrative support, environmental contract support, and architect and engineering contract support in the preparation of the PEIS. Lead Lab activities related to tritium supply and processing were also continued. Environmental contract efforts included the preparation of the PEIS and Record of Decision, and the conduct of environmental activities related to the overall planning and management of the program. A&E efforts included preconceptual design efforts, program planning, cost estimating and analysis. PEIS interface, and system engineering support. Due to the reduced scope of the Weapons Complex Reconfiguration Program, efforts in this area were significantly reduced over what had been planned. Approximately $25 million in	Includes contract costs related to the planning and management for a new tritium source through the conceptual design phase. FY 1995 activities will include environmental contract support, and architect and engineering contract support in the preparation of the Programmatic Environmental Impact Statement. Environmental contract efforts include the preparation of the PEIS and draft Record of Decision, and the conduct of environmental activities related to the overall planning and management of the program. A&E efforts will include preconceptual design efforts, program planning, cost estimating and analysis, PEIS interface, and system engineering support.	Prior year unobligated funding will be used to complete the final Tritium Supply and Recycling PEIS and issuance of the Record of Decision scheduled for November 1995.

III. Stockpile Management (Cont'd):
C. Reconfiguration (Cont'd):
1. Operating Expense (Cont'd):
b. Program Support (Cont'd)
c. Consolidation of Nonnuclear Facilities

Program Activity	FY 1994	FY 1995	FY 1996
b. Program Support (Cont'd)	unobligated balances were carried forward to provide for continued support of these efforts in FY 1995.		
	$ 56,430	$ 11,576	$ 0
c. Consolidation of Nonnuclear Facilities	Nonnuclear consolidation operating expenses are divided into two categories, activities which are part of the Total Project Cost (TPC) of the Nonnuclear Consolidation Construction Project, and those that are outside the TPC. Operating expense activities that are part of TPC include Subproject Support, which includes Pre-Title I Activities, Facilities Operations and Maintenance, Equipment Training and other project support. Operating expense funded activities that are outside of TPC include Activity Transfers, Scheduled Activity Qualification and Reconfiguration Management. This activity supports the transfer and qualification of 26 activities from the Mound, Pinellas, and Rocky Flats Plants to the Kansas City Plant, Savannah River Site, Los Alamos National Laboratory and Sandia National Laboratories. FY 1994 efforts were focussed on donor site activity transfer activities including the transfer of production and material inventories, documentation and drawings, tools, gauges and test equipment, and technology and processes. Several events occurred in FY 1994, which have resulted in an underrun of	Major cost drivers for FY 1995 include neutron generators, reservoirs, high power detonators, lightning arrestor connectors, gas transfer systems, and safe secure trailers. Widely varying levels of effort are required for transferring activities because some processes are highly complex and difficult to relocate and others are relatively simple. Also, for some activities there is an existing capability at the receiver site, which will facilitate the activity transfer. By the end of FY 1995 donor site activity transfers will be essentially complete. If any donor site support is required to complete an activity transfer in FY 1996, funding will be provided through an Integrated Contractor Orders with the receiver site.	FY 1996 efforts will focus on remaining activity transfers and qualifying production capability at the receiver sites. Major cost drivers in FY 1996 include activity transfer activity at receiver sites for neutron generators, reservoirs, high power detonators, and safe secure trailers. Qualification activities will be conducted at receiver sites for reservoirs, neutron generators, and safe secure trailers. Activity qualifications will be fully funded by the end of FY 1996 for high power detonators, neutron generators, thermal batteries, and lightning arrestor connectors.

III. Stockpile Management (Cont'd):
C. Reconfiguration (Cont'd):
1. Operating Expense (Cont'd):
c. Consolidation of Nonnuclear Facilities (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
c. Consolidation of Nonnuclear Facilities (Cont'd)	costs in FY 1994 and the requirement for greater than budgeted amounts in FY 1995. During FY 1994, the decision was made to cease nonnuclear manufacturing at the donor sites at the end of FY 1994, one year earlier than planned. In addition, decisions are still being made with regard to technologies to be incorporated into a consolidated nonnuclear production complex. Recent decisions made in this regard that will ultimately save the Stockpile Management Complex funding include the decision to incorporate the Acorn Reservoir technology into the Stockpile rather than proceeding with Cap Assembly, and the decisions have resulted in the need to rebaseline the project. Another issue that contributed to the underrun in FY 1994 is the issue of dual-need equipment and political ramifications associated with it. Major cost drivers for FY 1994 are include neutron generators, reservoirs, and safe secure trailers. Widely varying levels of effort are required for transferring activities because some processes are highly complex and difficult to relocate and others are relatively simple. Also, for some activities there is an existing capability at the receiver site, which will facilitate the activity transfer.		
	$ 60,600	$ 79,000	$ 80,000

III. Stockpile Management (Cont'd):
C. Reconfiguration (Cont'd):
1. Operating Expense (Cont'd):
d. Reconfiguration of Nuclear Facilities
e. Tritium Production

Program Activity	FY 1994	FY 1995	FY 1996
d. Reconfiguration of Nuclear Facilities	Due to the reduced scope of the Weapons Complex Reconfiguration Program, efforts in this area were significantly reduced over what had been planned. Efforts were continued in the area of tritium supply and associated recycle only. Continued pre-Title I design activities including the preparation of enhanced CDR/design criteria, QA plan, PSAR, and project and design management activities.	No funding request for this activity	No funding requested for this activity
	$ 3,386	$ 0	$ 0
e. Tritium Production	Completed conceptual design and analysis of Accelerator Production of Tritium (APT). Conducted a feasibility study on the use of the Advanced Test Reactor at the Idaho National Engineering Laboratory as a contingency source of tritium.	Prior year unobligated balances are being used to support risk reduction efforts related to the Accelerator Production of tritium. ($8,000)	Follow on funding requested for Accelerator Production of Tritium is included under the Tritium Source Program Activity included in the Stockpile Management program budget.
	$ 10,000	$ 0	$ 0
Subtotal, 1. Operating Expense	$ 134,481	$ 94,271	$ 80,000

III. Stockpile Management (Cont'd):
C. Reconfiguration (Cont'd):
2. Construction

Program Activity	FY 1994	FY 1995	FY 1996
2. Construction			
93-D-123, Complex 21, Various Locations			
93-1, Consolidation of Nonnuclear Facilities	Included the cost of detailed design and modifying existing space at the receiver sites to house the transferred activities from donor sites. At the FY 1994, design was completed for the following activities: Flat Cable Products, Mechanical Assemblies, Roundwire Detonator Cables, Nonnuclear Acorn, MGRS Surveillance, and Neutron Generators. Construction activities were completed for Neutron Detectors. Major cost drivers for FY 1994 included high power detonators and neutron generators. Several events occurred in FY 1994, which have resulted in an underrun of costs in FY 1994 and the requirement for greater than budgeted amounts in FY 1995. During FY 1994, the decision was made to cease nonnuclear manufacturing at the donor sites at the end of FY 1994, one year earlier than planned. In addition, decisions are still being made with regard to technologies to be incorporated into the consolidated nonnuclear production complex. Recent decisions made in this regard that will ultimately save the Stockpile Management Complex funding include the decision to incorporate the Acorn Reservoir technology into the Stockpile rather than proceeding with Cap Assembly, and the decision to maintain the Oxnard Facility only through FY 1995. These decisions have resulted in the need to rebaseline the project. Another issue that has contributed to	Includes the cost of detailed design and modifying existing space at the receiver sites to house the transferred activities. By the end of FY 1995, it is planned that detailed design will have been completed for 14 of the activity transfers with 10 completed facility modifications. Major cost drivers for FY 1995 are related to establishing the capability to produce neutron generators at SNL; Reservoirs and Nonnuclear Acorn at the KC Plant; and gas transfer systems and reservoir surveillance operations at the Savannah River Site.	Includes detailed design and facility modifications costs. By the end of FY 1996, approximately 20 Title II designs will have been completed and 15 of the facility modifications. Major cost drivers for FY 1996 are related to establishing the capability to produce reservoirs at the KC Plant; neutron generators at SNL; gas transfer systems and reservoir surveillance operations at the Savannah River Site; and beryllium technology and pit support at LANL.

III. Stockpile Management (Cont'd):
C. Reconfiguration (Cont'd):
2. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
93-1, Consolidation of Nonnuclear Facilities (Cont'd)	the underrun in FY 1994 is the issue of dual-need equipment and political ramifications associated with it.		
	$ 25,000	$ 58,000	$ 41,065
Subtotal, 93-D-123, Complex 21, Various Locations	$ 25,000	$ 58,000	$ 41,065
Subtotal, 2. Construction	$ 25,000	$ 58,000	$ 41,065
Use of Prior Year Balances	-$ 41,000	-$ 6,765	$ 0
Subtotal, C. Reconfiguration	$ 110,481	$ 145,506	$ 121,065

III. Stockpile Management (Cont'd):
D. Tritium Source
1. Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
D. Tritium Source			
1. Operating Expense	Related activities included in the Reconfiguration Program Activity.	Related activities included in the Reconfiguraiton Program Activity.	Funding is included in the FY 1996 request for implementation of the November 1995 ROD. This funding will be used to initiate a project to provide a new assured tritium source, either a reactor or an accelerator. This funding may also be used, in part, to initiate a light water tritium target development program to protect the contingency option of using existing light water reactors to make tritium. Funding will also support the establishment of a project office to manage implementation of the Secretarial ROD.
1. Operating Expense	$ 0	$ 0	$ 50,000
Subtotal, D. Tritium Source	$ 0	$ 0	$ 50,000

III. Stockpile Management (Cont'd):
E. Materials Surveillance and Technical Support
1. Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
E. Materials Surveillance and Technical Support			
1. Operating Expense	Funded MK-42 shipments, operations at Pacific Northwest Laboratory, and chemical processing at ORNL to recover Pu-242, Am-243, and Cm-244. ES&H and QA were given high priority. Continued at ORNL fabrication and shipment of Cf-252 neutron sources. Continued at Y-12 recovery and handling of HEU from CSMO receipts and backlog. Also funded, through the Oak Ridge Operations Office, a contract with Babcock and Wilcox (B&W) to reduce the backlog of scrap at Y-12. Maintain the safety basis for operation of building 9206 at OR. Supported safety and safeguards security program activities. Activities include development of policy, review and evaluation of existing programs upgrades as recommended due to life cycle needs, mission changes or technology advances, implementation of Price Anderson Act Activities and compliance requirements, and the cost effectiveness of overall program and/or proposals. The materials surveillance and disposition activities supported the storage, handling, shipping, receiving, safeguarding, control, and accountability, for surplus Defense Programs nuclear materials located at former Defense Programs facilities that have been	Continuation of the FY 1994 Programs.	The FY 1996 Budget will continue MK-42 chemical processing at the Oak Ridge National Laboratory (ORNL) to recover Pu-242, Am-243, and Cm-244. The fabrication and shipment of CF-252 neutron sources will also continue at ORNL. High priority is given to Environment, Safety and Health and Quality Assurance activities. The Y-12 Plant will continue the recovery and handling of highly enriched uranium from the Central Scrap Management Office receipts and backlog. A contract with Babcock and Wilcox, through the Oak Ridge Operations Office, will be continued to reduce the backlog of scrap at Y-12. The operations of the U-233 Storage and Distribution Center (Building 3019) will continue at the Oak Ridge National Laboratory. This program supports safety and safeguards/security oversight activities. These activities include development of policy; review and evaluation of existing programs; upgrades as recommended due to life cycle needs, mission changes, or technology advances; compliance requirements; and the cost-effectiveness of overall program and/or proposals.

III. Stockpile Management (Cont'd):
E. Materiels Surveillance and Technical Support (Cont'd):
1. Operating Expense (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
1. Operating Expense (Cont'd)	transferred to Environmental Management at the Farnald, Hanford, and Idaho National Engineering Laboratory sites. The budget also funds (1) shipping, receiving, accountability, storage, and processing at the Loe Alamos National Laboratory of plutonium-239/beryllium neutron sources returned from education institutions and other government agencies; and (2) the operation of the Uranium-233 Storage and Distribution Center located at the Oak Ridge National Laboratory. Continued support of the Safeguards and Security program and protective forces for the protection of attractiveness Level B and above at the Savannah River Site. Provided for salaries, benefits, travel, and contractual support services. Funding supports Training, Project Management, Environmental, Safety, and Health Oversight and Reactor Operations.		The materiels surveillance activities support the storage, handling, shipping, receiving, safeguarding, control, and accountability, for surplus Defense Programs nuclear materials located at former Defense Programs facilities that have been transferred to Environmental Management at the Farnald, Hanford, and Idaho National Laboratory sites. These activities also include the shipping, receiving, accountability, storage, and processing at the Loe Alamos National Laboratory of plutonium-239/beryllium neutron sources returned from education institutions and other government agencies. Continued support of the Safeguards and Security program and protective forces for the protection of attractiveness Level B and above at the Savannah River Site. Provided for salaries, benefits, travel, and contractual support services. Funding supports Training, Project Management, Environmental, Safety, and Health Oversight and Reactor Operations.
	$ 119,502	$ 101,558	$ 104,748

III. Stockpile Management (Cont'd):
E. Materials Surveillance and Technical Support (Cont'd):
2. Capital Equipment
3. Construction

Program Activity	FY 1994	FY 1995	FY 1996
2. Capital Equipment	Equipment funds provided for minor replacement of aged equipment for safety and continuity of operations, continuation of prior year work at the Oak Ridge National Laboratory and the Y-12 Plant.	Equipment funds provided for minor replacement of aged equipment for safety and continuity of operations, continuation of prior year work at the Oak Ridge National Laboratory and the Y-12 Plant.	Equipment funds provided for minor replacement of aged equipment for safety and continuity of operations, continuation of prior year work at the Oak Ridge National Laboratory and the Y-12 Plant.
	$ 1,785	$ 1,000	$ 1,000
3. Construction	Provided funding under project GPD-146 General Plant Projects at the Y-12 Plant.		
Subtotal, 3. Construction	$ 950	$ 0	$ 0
Use of Prior Year Balances	-$ 6,000	$ 0	$ 0
Subtotal, E. Materials Surveillance and Technical Support	$ 116,237	$ 102,558	$ 105,748
Stockpile Management	$ 1,524,137	$ 1,707,522	$ 1,848,439

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

WEAPONS ACTIVITIES STOCKPILE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Construction Funded Project Summary

Project No	Project Title	TEC	Total Prior Year Appropriation	FY 1994 Adjusted Appropriation	FY 1995 Amended Request	FY 1996 Request	Unappropriated Balance
GPD-121	General Plants Projects, Various Locations (FY 1994)	$ 7,700	$ 0	$ 7,700g/	$ 0	$ 0	$ 0
GPD-121	General Plants Projects, Various Locations (FY 1995)	1,000	0	0	1,000	0	0
GPD-121	General Plants Projects, Various Locations (FY 1996)	10,000	0	0	0	10,000	0
96-D-122	Sewage Treatment Quality Upgrade, Pantex Plant	11,300	0	0	0	600	10,700
96-D-123	Retrofit HVAC and Chillers, Y-12 Plant	13,600	0	0	0	3,100	10,500
96-D-125	Washington Measurement Operations Facility, AAFB, MD	4,725	0	0	0	900	3,825
95-D-122	Sanitary Sewer Upgrade, Y-12 Plant	26,300	0	0	2,200	6,300	17,800
95-D-123	Replace Transportation Safeguards Division Aviation Fac., AL b/	2,000	0	0	2,000c/	0	0
94-D-124	Hydrogen Fluoride Supply System, Oak Ridge Y-12 Plant	26,300	0	5,000	6,300	8,700	6,300
94-D-125	Upgrade Life Safety, Kansas City Plant	14,700	0	1,000	1,000	5,500	7,200
94-D-127	Emergency Notification System, Pantex Plant	6,200	0	1,000	1,000	2,000	2,200
94-D-128	Environmental Safety & Health Analytical Lab., Pantex Plant	8,800	0	800	1,000	4,000	3,000
93-D-122	Life Safety Upgrades, Y-12 Plant	29,200	2,700	5,000d/	5,000	7,200	9,300
93-D-123	Nonnuclear Reconfiguration, VL	166,552	26,000	25,000	58,000	41,065	16,487
92-D-126	Replace Emergency Notification System, VL	25,600	15,100	10,500e/	0	0	0
88-D-122	Facilities Capability Assurance Program (FCAP), VL						
	89-11 Lithium Process Replacement, Y-12	54,533	53,880	653	0	0	0
	89-13 Replace Micro Elec., KC	29,100	22,200	6,900	0	0	0
	91-27 Refurbish Power Supply, Y-12	54,597	28,600	5,347	5,400	1,100	14,150
	91-29 Replace Temperature and Humidity System, KC	35,277	27,577	7,700	0	0	0
	92-31 Replace/Refurbish Deter. Elev., Y-12	12,050	2,220	0	0	2,200	7,630
	92-32 Tritium Shipment Container Facility, SR	8,000	5,000	0	0	0	3,000
	93-35 Upgrade Material Engineering Lab, KC	13,200	500	4,700	160	2,370	5,470
	94-37 Chilled Water System Replacement, KC	11,600	0	400	5,500	0	5,700
	94-38 Roads and Parking Upgrade, Pantex	13,300	0	1,400	3,000	2,000	6,900
	95-39 Replace Comp. Air System, Pantex	3,900	0	0	410	420	3,070
	95-40 Replace Fire Mains, KC	4,900	0	0	350	0	4,550
	96-41 Replace Cooling Tower, East, KC	5,020	0	0	0	570	4,450
	Subtotals	245,477	139,977	27,100	14,820	8,660	54,920
	Fully Funded Projects	178,776	226,394	0	0	0	0
	Adjustments			(47,618)			
	Totals	424,253	366,371	(20,518)f/	14,820	8,660	54,920
88-D-123	Security Enhancement, Pantex Plant	125,000	66,861	20,000	13,400	9,739	
Total Weapons Stockpile Management		$903,230	$477,032	$ 55,482	$107,320	$111,425	$151,971

a/ Includes FY 1994 appropriation request ($2,000,000) and unobligated carryover ($5,700,000) from GPD-121.
b/ This project was submitted in February 1994 as an amendment to FY 1995 Congressional Budget.
c/ This project has been cancelled and the $2,000,000 will be used towards the FY 1996 prior year uncosted balances.
d/ Included FY 1994 appropriation request ($0) and unobligated carryover ($5,000,000) from GPD-121.
e/ Includes FY 1994 appropriation request ($2,000,000) and unobligated carryover ($8,500,000) from GPD-121.
f/ The FY 1994 appropriation request has been reduced from $27,100,000 to $21,100,000 reflecting the expected reapplication of prior years funds ($6,000,000) from GPD-121. $23,903,000 prior year appropriation credit transferred to EM in FY 1994 with the four Rocky Flats Subprojects. Also cancellation of 90-17 and 91-23 for FY 1995 Amendment of $24,118,000, reduction of 89-12 of $244,000, and 91-27 of $653,000, and addition to 91-30 of $1,300,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPD-121, General Plant Projects
Various Locations

TEC: $10,000
TPC: $10,600

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 10,000	$ 0	$ 10,000	$ 3,000
1997	0	0	0	4,000
1998	0	0	0	3,000

3. Narrative:

This funding for general plant improvements includes such construction and/or modifications as site upgrades and replacement, utilities, minor structures, and technical facilities required in the operation of stockpile management program installations. Projects of a reactive nature are included to comply with safety, environmental, and security requirements identified in surveys, appraisals or Tiger Team assessments. A project of this type cannot be fully detailed in advance. Individual projects are not listed due to the uncertainty of funding and requirements that will occur in FY 1996. This target for FY 1996 will allow for only a fraction of the requirements to be accomplished. At this level AL can begin to support the higher priority projects requested by the entire complex. At the time project authorization is requested, each project will be evaluated for flood hazards, safety, and environmental concerns.

This funding covers requirements of the stockpile management complex, the Albuquerque Operations Office (AL) and its operating contractors, including the Y-12 Plant (under the Oak Ridge Operations Office).

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-122, Sewage Treatment Quality Upgrade (STQU), Pantex Plant, Amarillo, Texas

TEC: $ 11,300
TPC: $ 12,400

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 2001

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 600	$ 0	$ 600	$ 250
1997	100	0	100	300
1998	6,900	0	6,900	5,700
1999	3,700	0	3,700	4,400
2000	0	0	0	500
2001	0	0	0	150

3. Narrative:

The Sewage Treatment Quality Upgrade project will control and process liquid from industrial processes, stormwater runoff, and sanitary wastewater. The first sub-project will update the existing sewage treatment lagoon to treat sewage to anticipated required levels. The second sub-project will repair and replace existing deteriorated sanitary sewer lines in Zone 12. The third sub-project eliminates industrial process discharges to surface ditches. The fourth sub-project will control and treat the storm water runoff from paved parking areas within the plant.

FY 1996 funds will be used for Title I design activities.

IV. B. Construction Funded Projects Descriptive Summary

1. Project Title and Location: Project 96-D-123, Retrofit HVAC and Chillers for Ozone Protection, Oak Ridge, Y-12 Plant, Oak Ridge, Tennessee

TEC: $13,600
TPC: $14,500

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 3,100	$ 0	$ 3,100	$ 2,300
1997	10,500	0	10,500	5,200
1998	0	0	0	6,100

3. Narrative:

This project will eliminate the use of "ozone depleting" chlorofluorocarbons (CFCs) currently used in the refrigeration and cooling systems at the Y-12 Plant, by replacing chillers and direct expansion (DX) air conditioners with new equipment and retrofitting existing chillers, DX units, and process coolers to operate on "ozone friendly" refrigerants. It will also upgrade the ventilation systems in chiller buildings and construct a small covered storage area to store CFC refrigerants removed from the affected chillers. This refrigerant will be stockpiled for future use.

FY 1996 obligations will provide for initiating Titles I and II engineering, start of procurement and construction activities.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-125, Washington Measurements Operations (WAMO) Facility Andrews Air Force Base (AAFB), Camp Springs, Maryland

TEC: $ 4,725
TPC: $ 4,784

Start Date: 1st Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1998

2. Financial Schedule (federal funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 900	$ 0	$ 900	$ 600
1997	3,825	0	3,825	3,775
1998	0	0	0	350

3. Narrative:

Construct a secure, two-story building west of Building 1792 at Andrews Air Force Base (AAFB), Camp Springs, Maryland. The first floor of this approximately 22,000-square-foot building will contain alarmed office areas, secure Technical Surveillance Counter Measures (TSCM) working areas, a TSCM training room, a shipping and receiving area, a CRYPTO vault, a secretary/receptionist area, and administrative offices. The upper level will contain a general office area, scientific offices, an emergency response center, a secure conference room, a scientific laboratory, a data-reduction center, and storage areas. This project will also provide the necessary power, water, and sewer hookups. The facility will contain heating, ventilation, and air conditioning (HVAC) units; telecommunications hardware; fire and security alarm systems; and an approved fire-control system for both levels. Work includes relocation and installation of an existing nearby 20-foot by 20-foot pre-engineered relocatable concrete building.

FY 1996 funds will be used for design, procurement, and construction activities.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-122, Sanitary Sewer Upgrade
Oak Ridge Y-12 Plant, Oak Ridge, Tennessee

TEC: $26,300
TPC: $27,800

Start Date: 1st Qtr. FY 1995 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1995	$ 2,200	$ 0	$ 2,200	$ 2,000
1996	6,300	0	6,300	2,900
1997	10,900	0	10,900	12,800
1998	6,900	0	6,900	8,600

3. Narrative:

This project will address upgrades to the existing Oak Ridge Y-12 Plant sanitary sewer system. The objective of the project is to repair known system deficiencies, which have resulted in outages and stoppages, sanitary waste water pollution entering the storm sewer system and East Fork Poplar Creek (EFPC), and a steadily increasing amount of surface water and ground water entering the sanitary system by inflow and infiltration. This project is infrastructure related and will be required regardless of the future missions at the Y-12 Plant. Upgrades will be comprised of (1) relining cracked pipe sections and joints, (2) replacing sewer pipe and joints too damaged for relining, (3) replacing the existing 8-inch-diameter outfall line on the west end with a 12-inch-diameter line, (4) rehabilitating deteriorated manholes by extending sealing manhole walls or by use of other repair approaches, (5) constructing a new pump station to replace an existing undersized pump station adjacent to an Material Access Area (MAA), (6) decommissioning a second existing pump station and installing an 18-inch-diameter outfall line to gravity drain flow from the western portion of the plant to the municipal system, and (7) removing cross-connections between the sanitary sewer system and storm sewer system.

The FY 1996 obligations will provide funding for Title III engineering, construction and construction management activities.

IV. B. Construction Project Descriptive Summary

1. Project Title and Location: Project 94-D-124, Hydrogen Fluoride Supply System, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee — TEC: $26,300 TPC: $28,820

Start Date: 1st Qtr. FY 1994 Completion Date: 1st Qtr. FY 1999

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1994	$ 5,000	$ 0	$ 5,000	$ 813
1995	6,300	0	6,300	6,787
1996	8,700	0	8,700	6,100
1997	4,900	0	4,900	10,400
1998	1,400	0	1,400	2,000
1999	0	0	0	200

3. Narrative:

This project will provide replacement anhydrous fluoride (AHF) supply and fluidbeds facilities, both of which are part of the existing enriched uranium recycle and conversion facilities in the Oak Ridge Y-12 Plant. The hydrogen fluoride (HF) facility, fluidbeds, and reconfigured HF supply system will be located on the east side of 9212 building adjacent to the existing HF dock. This configuration will allow elimination of the documentation and demolition of existing 9812 building because of overlapping footprints between the proposed facility and the existing facility. The HF facility will be enclosed in three process modules which will contain all potential HF releases. The replacement fluidbeds will be located in the east end of existing B-1 Wing of the 9212 building which will be remodeled for this function. The new HF supply system and the fluidbeds will be designed to be operated remotely as current technology permits.

The new HF system will include new hydrogen fluoride cylinder handling, vaporization and delivery piping systems, cylinder and vaporizer containment modules, automated control and leak detection systems; an HF pressure relief, fugitive emissions, and an emergency release collection and treatment system module. AHF is one of the most acidic substances known and does not biodegrade when released in water, in air, or on land. It must be buffered, diluted, or reacted to reduce its acidity. Exposure to an air concentration of 30 parts per million can be immediately dangerous to life and health and, even in lower air concentration, can produce severe irritation to the eyes, skin, and respiratory system. HF will be received at the existing HF dock in vendor-owned cylinders and trucks. The fluidbeds facility, which converts uranium oxide to fluoride, will include the installation of reduction and hydrofluorination fluidbed vessels, supporting facilities, vessel off-gas treatment system, transfer system, and process exhaust systems. The new HF supply system will utilize an existing dock on the east side of the existing enriched uranium recycle facility. This site is adjacent to the existing HF supply facility. The new facility will utilize existing HF treatment solution, (potassium hydroxide (KOH)), storage tanks and their tanker stations. The new fluidbed system will be constructed in
the east portion of building 9212 B-1 Wing. The project includes demolition of the existing area including a mezzanine, partitions, stairways, miscellaneous structures, fluidbeds and the resulting containerization and disposal of contaminated waste on a Y-12 Plant site interim waste storage pad.

The FY 1996 obligations will be used to complete module's procurement, complete site preparation, demolition and modifications, and begin facility utility upgrades and support construction management and Title III inspection services.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-125, Upgrade Life Safety
Kansas City Plant, Kansas City, Missouri

TEC: $14,700
TPC: $16,000

Start Date: 2nd Qtr. FY 1994 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1994	$ 1,000	$ 0	$ 1,000	$ 16
1995	1,000	0	1,000	1,584
1996	5,500	0	5,500	3,500
1997	5,200	0	5,200	6,600
1998	2,000	0	2,000	3,000

3. Narrative:

The Main Manufacturing Building and the Electrical Products Manufacturing Building of the Kansas City Plant (KCP) include approximately 2.3 million square feet and have an occupancy of approximately 4,000 personnel. This project will provide defined aisles in the main manufacturing building to allow personnel to safely evacuate the premises in case of fire or other emergency. Modifications to existing walls and penetrations are included to provide fire-rated separations between office floors. This upgrade involves replacement or modification of existing sliding doors to comply with Life Safety Code requirements for sliding doors on horizontal exit walls. In addition, smoke detectors will be installed on 26 sliding doors to enable the doors to close upon detection of smoke as required of openings in horizontal exits. Specific basement air handling systems will be modified to stope the existing exfiltrations from adjacent areas into existing exit enclosures. The Basement "29" and "Q" tunnels are affected. In addition, this project will provide the necessary construction to install redundant water supply feeds to all sprinkler systems protecting fire areas having a value greater than $50 million; installing automatic sprinklers inside six basement plenums in the Main Manufacturing Building; and separating water supplies to hose reels from sprinkler systems to dedicated hose supply systems.

FY 1996 funds will be used for construction subcontracts, Title III engineering, and project management activities.

IV. B. Construction Funded Projects Descriptive Summary

1. Project Title and Location: Project 94-D-127, Emergency Notification System, Pantex Plant, Amarillo, Texas

TEC: $6,200
TPC: $6,400

Start Date: 2nd Qtr. FY 1994 Completion Date: 3rd Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1994	$ 1,000	$ 0	$ 1,000	$ 0
1995	1,000	0	1,000	1,700
1996	2,000	0	2,000	1,400
1997	2,200	0	2,200	2,400
1998	0	0	0	700

3. Narrative:

This project consists of the design and installation of an Emergency Preparedness Notification System (EPNS) which replaces hardened amplifiers and associated equipment, remote amplifiers and public address (PA) speakers located throughout Plant, and upgrading of the audio integrity of the PA System throughout the Plant. EPNS will also upgrade the outdated Outdoor Warning System (OWS) and the Pantex Pocket Pager System (PPPS). The PA system is the only means of mass communications at the Pantex Plant and is essential to notify Plant employees and visiting personnel of impending and/or existing emergency situations. The PPPS is used to notify key Plant personnel not within range of the PA system.

FY 1996 funds will be used for design, procurement, and construction activities.

IV. B. Construction Funded Projects Descriptive Summary

1. Project Title and Location: Project 94-D-128, Environmental Safety and Health Analytical Laboratory, Pantex Plant, Amarillo, Texas

TEC: $8,800
TPC: $9,250

Start Date: 2nd Qtr. FY 1994 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1994	$ 800	$ 0	$ 800	$ 4
1995	1,000	0	1,000	1,796
1996	4,000	0	4,000	2,500
1997	3,000	0	3,000	4,500

3. Narrative:

This project provides for the design and construction of a new Environmental Safety and Health Analytical Laboratory (ESHAL). The proposed facility will replace and upgrade the capabilities of the existing chemistry laboratory which is outdated and ill-equipped to serve the needs and responsibilities of chemical analysis for plant materials. The facility will: (a) provide chemical analysis of plant materials and conduct surveillance evaluations on commercially procured weapons materials; and (b) provide environmental testing laboratories which will allow for the onsite testing of environmental samples applicable to the Resource Conservation and Recovery Act (RCRA) and the Environmental Protection Agency (EPA).

FY 1996 funds will be used for design, procurement, and construction activities.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-122, Life Safety Upgrades, Y-12 Plant, Oak Ridge, Tennessee

TEC: $29,200
TPC: $30,320

Start Date: 1st Qtr. FY 1993 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1993	$ 2,700	$ 0	$ 2,700	$ 625
1994	5,000	0	5,000	1,683
1995	5,000	0	5,000	8,692
1996	7,200	0	7,200	7,400
1997	9,300	0	9,300	5,800
1998	0	0	0	5,000

3. Narrative:

This project will provide upgrading and modernization of fire protection systems, electrical equipment, mechanical systems, and emergency electrical generators which provide power for critical life safety systems. This project is part of a program which is intended to bring the Y-12 Plant into compliance with National Fire Protection Association (NFPA) codes relating to life safety.

The FY 1996 obligations will continue the installation of the fire alarm system.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-123, Nonnuclear Reconfiguration, Complex-21, Various Locations

TEC: $166,552
TPC: $200,755

Start Date: 3rd Qtr. FY 1993 Completion Dates: 1st Qtr. FY 2001

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs B/
1993	$ 26,000	$ 0	$ 26,000	$ 171
1994	25,000	0	25,000	12,309
1995	58,000	0	58,000	63,691
1996	41,065	0	41,065	51,800
1997	14,487	0	14,487	36,581
1998	2,000	0	2,000	2,000

3. Narrative:

As a result of new mission requirements, the subproject Nuclear Reconfiguration (93-2) has been deleted from this project.

The TEC for nonnuclear reconfiguration decreased from $192,318,000 to $166,552,000 to reflect effects of improved detail, schedule refinements, mission downsizing, and increased efficiency measures. TPC decreased from $257,282,000 to $200,755,000 to reflect the TEC changes as well as revised operational scope requirements and estimates.

Complex-21 is the Department of Energy's designation for a reconfigured nuclear complex which will provide the nuclear weapons to support the Nation's nuclear deterrent policy through the middle of the next century. The mission of the Nuclear Weapons Complex is now focused on ensuring the viability of the enduring nuclear weapons stockpile. This requires the DOE to support four major activities: (1) limited life component exchanges; (2) the Stockpile Evaluation Program: (3) repairing or replacing weapons components as needed; and (4) upgrading to improve stockpile safety, security, and reliability.

The Nonnuclear Reconfiguration Project involves consolidating the activities from three donor sites, the Mound, Pinellas, and Rocky Flats plants, into five receiver sites; the Kansas City Plant (KCP), the Sandia National Laboratories/New Mexico, the Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and the Savannah River Site.

B/ Utilization of FY 1993 and FY 1994 funds was impeded due to unexpected events dramatically affecting project execution and, thereby, resulting in significant carryover and reutilization of FY 1993 appropriations in FY 1994 and FY 1995. Planned activities were significantly delayed and altered due to delays in finalizing the NEPA FONSI, mission changes due to the June 1992 Bush-Yeltsin Agreement (START II Treaty of 1/93), as well as supplemental Congressional studies, required prior to utilization of funds and issues associated with dual need equipment.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 88-D-122, Facilities Capability Assurance Program (FCAP), Various Locations

TEC: $424,253
TPC: $472,653

Start Date: 2nd Qtr. FY 1988 Completion Date: Ongoing

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1988	$ 15,400	$ 0	$ 15,400	$ 3,399
1989	79,341	0	77,492	18,512
1990	83,099	11,119 a/	94,821	46,774
1991	106,806	0	107,158	59,490
1992	47,473	0	9,829	38,569
1993	87,100	-63,967 b/	13,934	32,738
1994	27,100 c/	-47,618 c/	25,161	40,946
1995	14,820	0	16,878	60,497
1996	8,660	0	8,660	32,650
1997	26,220	0	26,220	42,880
1998	23,050	0	23,050	20,271
1999	5,650	0	5,650	27,527

3. Narrative:

The total estimated cost (TEC) for this project has been decreased from $445,548,000 to $424,253,000 and the TPC has been decreased from $493,923,000 to $472,653,000, which is a compilation of subtracting the TEC and TPC of completed, canceled, scope changes, reprogramming of excess funds, addition of new starts and projects reprogrammed into FCAP.

In accordance with the FCAP plan/charter the uncommitted funds for these canceled, completed, and scope changed subprojects have been reconciled and applied to other ongoing FCAP subprojects to reduce out-year mortgages and these actions have been accomplished utilizing the baseline change control process. Additionally, $24,118,000 was withdrawn from prior year funds on numerous subprojects to be applied toward the FY 1995 budget shortfall through reprogramming.

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a/ Reflects the sequestration of funds for FY 1990 (-$1,246,000) and the FY 1990 omnibus reprogramming approved by appropriations subcommittee ($12,365,000).

b/ FY 1992 reprogramming, approved in FY 1993, provided funding $5,000,000 for subproject 92-32. $68,967,000 was withdrawn from FCAP for the FY 1994 budget reduction and reprogrammed to Reconfiguration. This resulted in a net adjustment of $63,967,000.

c/ The FY 1994 appropriation request has been reduced from $27,100,000 to $21,100,000 reflecting the expected reapplication of prior year funds ($6,000,000) from GPD-121. $23,903,000 of prior year appropriation credit transferred to EM in FY 1994 with the four Rocky Flats subprojects. Also cancellation of 90-17 and 91-23 for FY 1995 Amendment of $24,118,000, reduction of 89-12 of $244,000 and 91-27 of $653,000, and addition to 91-30 of $1,300,000.

IV. B. Construction Funded Project Descriptive Summary (Continued)

1. Project Title and Location: Project 88-D-122, Facilities Capability Assurance Program (FCAP), Various Locations (Continued)

3. Narrative: (Continued)

The purpose of the FCAP is to rectify infrastructure problems in aging buildings, utility systems, and other real property assets through the DOE Weapons Complex, through an ongoing line item project. FCAP approaches the correcting of aging, energy inefficient, and potentially unsafe infrastructure facilities through an ongoing line item project. FCAP utilizes an objective process to identify each project for inclusion into the line item and prioritized each project to optimize the allocation of limited capital resources. Each project is further reviewed, approved, and prioritized by the Capital Assets Management Program (CAMP). This overall investment strategy is required to assure that the aging infrastructure facilities within the DOE Weapons Complex are kept from further deterioration, maintaining energy efficiency, promoting continued safe physical plant operations, and reduce high maintenance requirements to meet the current mission requirements of the Department of Energy Weapons Complex.

IV. B. Construction Funded Projects Descriptive Summary

1. Project Title and Location: Project 88-D-123, Security Enhancement, Pantex Plant, Amarillo, Texas

TEC: $125,000
TPC: $130,000

Start Date: 3rd Qtr. FY 1988 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1988	$ 5,700	$ 0	$ 5,700	$ 69
1989	7,500	0	3,500	2,586
1990	5,500	(83)a/	2,417	3,514
1991	18,244	0	23,701	8,407
1992	30,000	0	30,692	15,042
1993	0	0	372	9,700
1994	20,000	0	20,000	13,235
1995	15,000	0	15,000	25,616
1996	13,400	0	13,400	22,239
1997	9,739	0	10,218	24,592

3. Narrative:

This project reflects security enhancements required to improve the security of the Pantex Plant relative to the current threat matrix, vulnerability assessments, and knowledge to date. The scope and priority of each subproject may be subject to subsequent revision to reflect the results of further vulnerability assessments, field exercises and inspections, and management direction. This is required to assure that the results of further threat scenario analyses are considered in the actual implementation of the projects and subprojects. An in-depth analysis of Pantex and its current ability to counter all adversary threats enumerated in the "Generic Threats to DOE Nuclear Programs and Facilities Statement," dated January 1983, included detailed vulnerability studies and credible scenarios involving a physical protection and, to a lesser extent, in material control and accountability. These security upgrades address these vulnerabilities.

a/ Reflects the Sequestration of funds for FY 1990.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Weapons Program Direction

Activity	FY 1994 Adjusted	FY 1995 Approp.	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Weapons Program Direction					
Operating Expenses	$ 176,389	$ 157,498	$ 0	$ 157,498	$ 136,169
Capital Equipment	3,619	2,354	0	2,354	1,887
Subtotal, Weapons Program Direction	$ 180,008 a/	$ 159,852	$ 0	$ 159,852	$ 138,056
Use of Prior Year Balances	-484 b/	-10,000	-1,499	-11,499	-6,400
TOTAL	$ 179,524	$ 149,852	$ -1,499	$ 148,353 c/	$ 131,656 d/
Summary					
Operating Expenses	$ 176,389	$ 157,498	$ 0	$ 157,498	$ 136,169
Capital Equipment	3,619	2,354	0	2,354	1,887
Subtotal, Weapons Program	$ 180,008	$ 159,852	$ 0	$ 159,852	$ 138,056
Use of Prior Year Balances	-484	-10,000	-1,499	-11,499	-6,400
Total Program	$ 179,524	$ 149,852	$ -1,499	$ 148,353	$ 131,656
Staffing (FTE's)	1,108	997		997	977

a/ FY 1994 Appropriation - $281,085,000. Reflects Contractor Pay Freeze Savings of $-1,077,000; reflects comparability adjustment of $100,000,000, transferred to the Worker and Community Transition Decision Unit for adjusted appropriation of $180,008,000. Includes $17,336,000 for the Office of Emergency Management. Includes $600,000 for the Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board.

b/ Reflects reprogramming of $483,546 to Weapons Research and Development.

c/ FY 1995 Appropriation - $159,852,000. Reflects the use of $11,499,000 prior-year balances to offset New Budget Authority. Includes $17,336,000 for the Office of Emergency Management. Includes $551,000 for the Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board.

d/ Includes $20,056,000 for the Office of Emergency Management and $1,000,000 for the Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board. Reflects the use of $6,400,000 prior-year balances to offset New Budget Authority.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WEAPONS ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Weapons Program Direction

FY 1995 Appropriation	$ 148,353
- Adjustment, Use of Prior-Year Balances	+11,499
FY 1995 Adjusted	$ 159,852
- Transfer	0
FY 1995 Comparable	$ 159,852
- Headquarters	-29,146
- Albuquerque Operations Office	+2,740
- Nevada Operations Office	+548
- Oakland Operations Office	+560
- Los Alamos Community Assistance	+300
- Capital Equipment	+33
- Office of Emergency Management	+2,720
- Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board	+449
- FY 1996 Obligational Authority	138,056
- Adjustment, Use of Prior-Year Balances to offset FY 1996 New Budget Authority	-6,400
FY 1996 Congressional Budget Request	$ 131,656

DEPARTMENT OF ENERGY
FY 1996/FY 1997 CONGRESSIONAL REQUEST
ASSISTANT SECRETARY FOR DEFENSE PROGRAMS
(dollars in thousands)

KEY ACTIVITY SUMMARY

WEAPONS PROGRAM DIRECTION

I. Preface: Weapons Program Direction

The Weapons Program Direction Budget provides funds for personnel-related expenses, capital equipment, and contractual services for Defense Programs offices at DOE Headquarters and three Operations Offices. The statutory Community Assistance Program for Los Alamos, NM, is also funded from this account.

In addition, this budget provides funds for the Department's Emergency Operations Center and the Technical Support Center, managed by the Office of Nonproliferation and National Security, and the Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board, managed by the Office of Environment, Safety and Health.

The Defense Programs Federal staffing allocations have been declining over the past 3 years in response to changing program requirements and overall Federal employment reductions. These factors, coupled with the changing nature of the DP mission, formed the basis for the realignment of programs and staffing resources at DP Headquarters.

On June 23, 1994, a major Defense Program Headquarters reorganization was approved by the Department. This reorganization brings the Defense Programs organization structure into alignment with the Department's National Security Strategic Plan and the changing Defense Programs mission. It also meets the Secretary's streamlining goals to reduce total staffing levels, improve supervisor/employee ratios, and reduce the number of organizational components.

The new organizational structure centers on four core entities: Stockpile Stewardship; Stockpile Management; Facility Transition and Technical Support; and Planning and Resource Management. In addition, the position of Principal Deputy Assistant Secretary for Quality has been established.

The structure of the Weapons Program Direction budget follows:

<u>Defense Programs</u>

Headquarters:
- Office of the Assistant Secretary for Defense Programs
- Office of the Assistant Secretary for Research and Development
- Office of the Deputy Assistant Secretary for Military Application and Stockpile Support
- Office of the Deputy Assistant Secretary for Planning and Resource Management

Field Offices:
- Albuquerque Operations Office
- Nevada Operations Office
- Oakland Operations Office

Los Alamos Community Assistance Program

<u>Other Department of Energy Programs</u>

Office of Emergency Management (managed by the Office of Nonproliferation and National Security)
Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board (managed by the Office of Environment, Safety, and Health)

The mission, goals, and management responsibilities for each organizational entity follow:

Headquarters:

Office of the Assistant Secretary for Defense Programs

The Office of the Assistant Secretary for Defense Programs (ASDP) provides overall management direction and administration in support of our Nation's nuclear deterrent mission and assures that operations are conducted in the most efficient manner consistent with national security policies and objectives. A Principal Deputy Assistant Secretary for Quality will integrate total quality principles and practices into every element of Defense Programs Federal, contractor, and laboratory operations.

Office of the Deputy Assistant Secretary for Research and Development

The Office of the Deputy Assistant Secretary for Research and Development oversees and directs the programs and related facilities for stockpile stewardship; provides management and oversight for major initiatives including the National Ignition Facility and the Advanced Scientific Computing Initiative; ensures that DP maintains the technology base and core competencies to meet future national security requirements; enhances national economic and industrial competitiveness through technology transfer and direct funded education programs; and forges the partnerships with our national laboratories to ensure their enduring health and vitality.

Office of the Deputy Assistant Secretary for Military Application and Stockpile Support

The Office of the Deputy Assistant Secretary for Military Application and Stockpile Support provides for the safe and secure maintenance of the existing weapons stockpile. This includes the production of weapons components to maintain a safe and reliable stockpile, a weapons surety program, management of required weapons materials, dismantlement of excess nuclear weapons, management of weapons production facilities, and management of the Defense Programs emergency response programs.

Office of the Deputy Assistant Secretary for Planning and Resource Management

The Office of the Deputy Assistant Secretary for Planning and Resource Management provides crosscutting planning, budget, and logistical support to all Defense Programs Headquarters program activities. This office also manages the Defense Programs training and staff development programs and serves as a focal point for Defense Programs employment outreach initiatives. Funding is included in support of the Capital Asset Management Program and Condition Assessment Surveys (CAMP/CAS) through FY 1995.

Field Offices:

Albuquerque Operations Office

Albuquerque's (AL) goal is the effective management and oversight of the weapons Stockpile Management and Stockpile Stewardship programs. An integral part is the coordination and integration of weapons activities at the Sandia National Laboratories, the Los Alamos National Laboratory, and contractors consisting of Mason and Hanger-Silas Mason Company, Inc.; Allied Signal Aerospace Company, Kansas City Division; Martin Marietta Energy Systems, Inc.; Westinghouse Electric Corporation, and Savannah River Company. The safe/secure transport of all government-owned strategic quantities of special nuclear materials, the effective management of all assigned defense programs, and other nonweapons and reimbursable program and project activities are also a significant part of AL's mission.

Major objectives continue to be the successful execution, through Federal personnel and contractor support, of assigned programs for quality assurance, safety, transportation, dismantlement, retirement, and disposal of nuclear weapons. Albuquerque has lead mission responsibilities for the weapons development and testing activities at the Sandia and Los Alamos National Laboratories. As a result, AL performs a major role in directing the Department's weapons activities.

Nevada Operations Office

Nevada's primary goal is the effective management and oversight of the Weapons Testing Capabilities and Readiness and Stockpile Stewardship Program at the Nevada Test Site through four major contractors (EG&G, REECO, Raytheon, and Wackenhut) and two Federal agencies (Environmental Protection Agency and Air Resource Laboratory/Special Operations and Research Division). However, it is planned that these activities will be carried out by a single contractor, operating under a new contract, in early FY 1996. The Sandia National Laboratories, the Los Alamos National Laboratory, and the Lawrence Livermore National Laboratory also participate in assigned portions of the Programs. The safe/secure transport of experimental special nuclear material devices involved in experiments at the Nevada Test Site and the effective management of all other assigned programs and project activities, including energy and nonweapons programs, are a major part of the mission.

Major objectives are: to provide the capability to resume the conduct of underground nuclear weapons tests, if directed by the President, in a manner which maximizes public safety and the achievement of scientific objectives; to support experiments conducted by the national laboratories involving stewardship of the Nation's nuclear weapons stockpile; to provide technology, facilities, and expertise for non-DOE customers; to conduct environmental assessments and remediation; to provide the DOE response for radiological or malevolent nuclear emergencies; to dispose of low-level radioactive waste for DOE; and to plan on-site technical monitoring for nuclear treaty compliance.

Oakland Operations Office

The Oakland Operations Office (formerly the San Francisco Operations Office) carries out a multiprogram mission assigned by the Secretary of Energy and Headquarters Program Assistant Secretaries. One of the principal mission assignments is Defense Programs. Oakland's Defense Program and related functions are under the direction of the Assistant Manager for Defense Programs (AMDP) with a dual role as the Lawrence Livermore National Laboratory DOE Site Manager.

Major objectives continue to be the successful execution, through Federal personnel and contractor support, of assigned Defense Programs missions including assistance in the areas of facility operations management; institutional management; programmatic direction and control of defense research and technologies development; radiological and environmental sciences programs; environmental protection and quality assurance, safety, and health implementation plans; National Ignition Facility advanced conceptual design and project planning support; and safeguards and security policies and programs for Oakland and other DOE installations throughout California, including Sandia National Laboratories-Livermore.

Los Alamos Community Assistance Program

The Department of Energy administers the Community Assistance Program under Section 91 of Public Law 94-187, the Atomic Energy Community Act of 1955, as amended, to provide assistance to specified units of local government in the Los Alamos community associated with the Los Alamos National Laboratory. The purpose of the assistance is to: (a) compensate for the lack of an industrial or commercial tax base, and (b) assist in achieving financial independence. Effective July 1, 1987, the DOE entered into contracts with the Los Alamos County and the Los Alamos County School Board, which extend through June 30, 1996, in accordance with DOE's authority to contract for such assistance. The contracts utilize the funding formula adopted in 1979 by the DOE Working Group on Community Assistance and include updated base amounts to which the formulas are applied.

Office of Emergency Management

The Office of Emergency Management serves as the Department's focal point of contact for emergency preparedness and response activities. The principal mission of the Office is to assure an integrated and coordinated Departmental response to all emergencies. The Office coordinates the planning, development, testing, and utilization of the Department's Emergency Management System (EMS); provides guidance and program reviews of emergency management programs; manages the flow of emergency information; maintains a readiness assurance program; and assists in the organization and training of Headquarters and field office personnel involved in emergency preparedness and response. The Office is responsible for managing and operating the Headquarters Emergency Operations Center (EOC) at the Forrestal Building and the Technical Support Center (TSC) at the Germantown facility. While this office is funded within Weapons Program Direction, it is managed by the Office of Nonproliferation and National Security.

Departmental Representative to the Defense Nuclear Facilities Safety Board

The Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board assists the Secretary of Energy through the Assistant Secretary for Environment, Safety and Health in carrying out Departmental responsibilities to cooperate fully with the Board as mandated by law (Public Law 100-456 dated September 29, 1988, amended Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.). The Office is the focal point to facilitate the Defense Nuclear Facilities Safety Board interactions with senior Departmental management. The Office provides advice and guidance to Heads of Departmental Elements and the Principal Secretarial Officers covering the entire scope of the responsibilities and functions of the Board. The Office monitors and maintains general oversight of internal Departmental actions to ensure compliance with the Atomic Energy Act of 1954 and, in coordination with the Office of Program Offices, responds to or takes actions in concurrence with the Defense Nuclear Facilities Safety Board recommendations, concerns, or observations.

Budget Structure Realignment

The FY 1996 Budget structure at Headquarters has been changed to focus on object classes rather than organization. Formerly, the Headquarters organizations were identified with separate funding amounts. In FY 1996 and in the future, Headquarters will be addressed in total. This permits more meaningful comparisons of budget levels between years, and is much less sensitive to changes in DP's organizational structure during this time of mission and workforce change. All other budget structure elements remain the same in Program Direction.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

II. A. Summary Table: Weapons Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Federal and Contractual Support				
Headquarters	$ 77,189	$ 60,671	$ 31,525	$ -29,146
Field				
Albuquerque Operations Office	42,515	40,720	43,460	2,740
Nevada Operations Office	15,945	15,592	16,140	548
Oakland Operations Office	15,595	13,638	14,198	560
Subtotal, Field	$ 74,055	$ 69,950	$ 73,798	$ 3,848
Subtotal, Federal and Contractual Support	$ 151,244	$ 130,621	$ 105,323	$ -25,298
Los Alamos Community Assistance	$ 10,209	$ 10,990	$ 11,290	$ 300
Capital Equipment				
Headquarters	250	250	250	0
Field				
Oakland Operations Office	369	104	137	33
Subtotal, Field	$ 369	$ 104	$ 137	$ 33
Subtotal, Capital Equipment	$ 619	$ 354	$ 387	$ 33
Office of Emergency Management				
Operating	$ 14,336	$ 15,336	$ 18,556	$ 3,220
Capital Equipment	3,000	2,000	1,500	-500
Subtotal, Office of Emergency Management	$ 17,336	$ 17,336	$ 20,056	$ 2,720
Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board	$ 600	$ 551	$ 1,000	$ 449
Use of Prior-Year Balances	-484	-11,499	-6,400	5,099
Total, Weapons Program Direction	$ 179,524	$ 148,353	$ 131,656	$ -16,697

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Weapons Program Direction			
Federal and Contractual Support			
Headquarters	Funding by Object Class: Salaries/Personnel Compensation $17,437 Benefits 2,968 Travel 2,473 Contr. Services 54,311 --- $77,189	Funding by Object Class: Salaries/Personnel Compensation $16,686 Benefits 2,715 Travel 2,975 Contr. Services 38,295 --- $60,671	Funding by Object Class: Salaries/Personnel Compensation $15,570 Benefits 2,490 Travel 2,445 Contr. Services 11,020 --- $31,525
	Provided funding for Federal staff and contractor support to successfully carry out assigned Defense Programs (DP) missions. Activities included: development of DP policy; coordination of the development of Strategic and Multi-Year Program Plans; continued program management, direction, and support of programs related to accomplishing the Weapons Activities mission; continued oversight of the weapons laboratories, including management of the Work for Others program and an expanding technology transfer program; management and coordination of DP-wide budget and financial management; NEPA compliance and administration of the NEPA process within DP; continued the development and implementation of DP's self assessment program; ES&H coordination; and monitoring of transition activities related to the transfer of facilities from DP to the Office of Environmental Restoration and Waste Management (EM). Provided $25.1 million for Capital Asset Management Process/Condition Assessment Survey (CAMP/CAS). This level of funding reflects a transfer of	Continues to strengthen the management, organization, performance, and oversight of Defense Programs national security activities while downsizing DP Federal staff and contractual support consistent with long-term mission responsibilities. FY 1995 funding of $18 million for CAMP/CAS represents the final year that this program will be funded from the Weapons Program Direction account. It is anticipated that any future funding needed would be provided from program accounts. Continues computer and communication activities at DP Headquarters. Provides funding for DOE's Technical Leadership Intern Program. Continues funding for DP's training initiatives. Continues to fund travel required to carryout oversight of DP's complex and to insure the effective management of DP's programs.	Continue to downsize DP Federal staff and contractual support consistent with long-term mission responsibilities. Reduced contractual services funding is principally attributable to the termination of Program Direction funding for the CAMP\CAS program. Remaining contractual support activities will be prioritized in view of changing DP needs. These activities include: -Continue program management, direction, and support of those programs related to accomplishing the Weapons Activities mission and programmatic oversight of nuclear weapons stockpile management, and direct the DOE Nuclear Weapons Surety Program. -Oversee/direct programs and related facilities for nuclear weapons stockpile stewardship; manage dual-benefit R&D programs and cooperative agreements, provide leadership in establishment of a partnership between the DP laboratories

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III. Weapons Program Direction (Cont'd):
Federal and Contractual Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Headquarters (Cont'd)	funds to EM for Rocky Flats ($1,150,000) and the Idaho Chemical Processing Plant ($765,000). Continued to support Automated Office Support System (AOSS), Local Area Network (LAN), and communication activities for DP Headquarters organizations. Found efficiencies to permit a 10 percent reduction in support services contracting. Continued to support DP's Intern Program and DOE's Technical Leadership Intern Program. Continued funding for DP's training program, including Quality Awareness training for every DP employee.		and DP to preserve laboratory core competencies and technology base. -Continue computer communication activities at DP Headquarters organizations including: upgrade and replacement of computer hardware and software; upgrade capabilities of LAN; end-user support for computer and LAN equipment and software; timeshare services; DP share of DOE's general computer support costs for hotline support, hardware installations and repairs; training; and other facilities-related costs. -Continue funding for DP's training initiatives. -Continue to fund travel required to carry out oversight of DP's complex and to insure the effective management of DP's programs.
	260.0 FTE $ 77,189	209.0 FTE $ 60,671	184.0 FTE $ 31,525

III. Weapons Program Direction (Cont'd):
Federal and Contractual Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Field			
Albuquerque Operations Office	Funding by Object Class: Salaries/Personnel Compensation $24,665 Benefits 3,998 Travel 1,695 Contr. Services 12,157 $42,515	Funding by Object Class: Salaries/Personnel Compensation $24,975 Benefits 4,045 Travel 1,500 Contr. Services 10,200 $40,720	Funding by Object Class: Salaries/Personnel Compensation $26,155 Benefits 4,920 Travel 1,685 Contr. Services 10,700 $43,460
	Continued the implementation of various Chief Financial Officers' Act provisions; conducted the mandated reviews and surveillance associated with the implementation of DOE Order 2200.13, Oversight of Integrated Financial Management, a program designed to provide oversight of the contractor's financial operations; and implemented the recommendations made during the Controller's Compliance Review of Work for Others.	Provides funds for general management, executive direction, and general supervision of program operations, negotiation and administration of contracts, and supporting administrative activities.	Provide funds for general management, executive direction, and general supervision of program operations; negotiation and administration of contracts, and supporting administrative activities.
	Contractual services funding included costs for general management, executive direction and general supervision of program operations; negotiation and administration of contracts; and supporting administrative activities. In addition, funds communications and utilities costs and all other supplies, materials, and services.	Contractual support is required for communications and utilities costs and all other supplies, materials, and services.	Contractual support is required for communications and utilities costs and all other supplies, materials, and services.
	Telecommunication programs supply intersite and local secure and unclassified communications capability for AL in support of Computer Integrated Manufacturing (CIM), weapons programs, ES&H, and National Security Emergency Preparedness (NSEP) programs. Mandated services are included in this area such as National Communications Systems, Network Service Program and	An MCI Microwave Radio System is a proposed upgrade to the Disaster Avoidance Network. The need for AL to communicate outside of the immediate complex is critical to AL's ability to accomplish its assigned mission. The MCI Microwave System will provide a diverse path, which will bypass all known single points of failure to the communications system. A new support service agreement is being negotiated with the Air Force for electricity, gas, water, sewage, and refuse. These costs are expected to increase substantially.	Telecommunication programs supply intersite and local secure and unclassified communications capability for AL in support of Computer Integrated Manufacturing, weapons programs, ES&H, and National Security Emergency Preparedness (NSEP) programs. Mandated services are included in this area such as the National Communications Systems, the Network Services Program, and the National Communications Program. The FTS includes DOE/HQ charges for mandated services. Local telephone services are provided by U.S. West and the Air Force located on Kirtland Air Force Base through the Air Force/DOE Memorandum of Understanding. Increased funding in this area is due to requirements for upgrading NSEP communications capabilities in support of AL

III. Weapons Program Direction (Cont'd):
Federal and Contractual Support (Cont'd):
Field (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Albuquerque Operations Office (Cont'd)	the National Communications Program. The Federal Telecommunications System (FTS) includes DOE/HQ charges for mandated services. Local telephone services are provided by US West and the Air Force located on Kirtland Air Force Base through the Air Force/DOE Memorandum of Understanding. Funding is included for upgrading NSEP communications capabilities in support of AL management, SECOM, the AL 24 hour telecommunications center, and six Emergency Operations Centers. Estimates for electricity, gas, water, sewage, refuse, and steam are based on data provided by the Kirtland Air Force Base.		management, the telecommunications center, and six Emergency Operations Centers. The Air Force supplies electricity, gas, water, sewage, and refuse. As a tenant organization, DOE reimburses the Air Force for services through an Interagency Agreement.
	557.0 FTE $ 42,515	500.0 FTE $ 40,720	505.0 FTE $ 43,460
Nevada Operations Office	Funding by Object Class: Salaries/Personnel Compensation $ 8,351 Benefits 1,796 Travel 539 Contr. Services 5,259 $15,945	Funding by Object Class: Salaries/Personnel Compensation $ 8,735 Benefits 1,865 Travel 540 Contr. Services 4,452 $15,592	Funding by Object Class: Salaries/Personnel Compensation $ 8,925 Benefits 1,968 Travel 547 Contr. Services 4,700 $16,140
	Continued to meet current functional and programmatic requirements, implemented Secretarial initiatives, and complied with DOE Orders, laws, and other regulations. Continued the implementation of the Landlord Cost Concept. Funds contractual services requirements such as communications, rent, and utilities, printing and reproduction, and other miscellaneous services.	Continues financial improvements and operations consistent with the Chief Financial Officers Act; improvements in business management practices, including implementation of Task Order contracting; management oversight responsibilities to sustain a high level of excellence in safety, health, and environmental protection activities; and implementation of a Self-Assessment Program to include independent assessments in all areas of	Continues financial improvements and operations consistent with the Chief Financial Officers Act; improvements in business management practices, including implementation of Task Order contracting; management oversight responsibilities to sustain a high level of excellence in safety, health, and environmental protection activities; and implementation of a Self-Assessment Program to include independent assessments in all areas of

III. Weapons Program Direction (Cont'd):
Federal and Contractual Support (Cont'd):
Field (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nevada Operations Office (Cont'd)	Contractual services requirements include revisions to the scope of work performed by a mail and support services contractor.	ES&H, S&S, and program management. Provides for communications, rent, utilities, and other miscellaneous services such as mail and support, supplies, materials, and training requirements.	ES&H, S&S, and program management. Provides for communications, rent, utilities, and other miscellaneous services such as mail and support, supplies, materials, and training requirements. Support services costs continue to be based on the Landlord Cost Concept.
	173.0 FTE $ 15,945	171.0 FTE $ 15,592	170.0 FTE $ 16,140
Oakland Operations Office	Funding by Object Class: Salaries/Personnel Compensation $ 5,665 Benefits 2,113 Travel 780 Contr. Services 7,037 $15,595	Funding by Object Class: Salaries/Personnel Compensation $ 5,610 Benefits 1,178 Travel 850 Contr. Services 6,000 $13,638	Funding by Object Class: Salaries/Personnel Compensation $ 5,850 Benefits 1,248 Travel 900 Contr. Services 6,200 $14,198
	Continued oversight responsibility in the areas of environment, safety, and health; laboratory institutional management; and safeguards and security. Continued support of the Secretary's 10-point initiative, and SEN 6, 7, 9, and 11 to increase ES&H oversight of LLNL. Contractual services funding requested for the following: Lease charges for trailer complexes at LLNL, transportation cost associated with PCS moves, communications charges, and continuation of the Safeguards and Security contract. In addition, funded for technical support to DOE staff in the computer security program and operations security program; provided	Provides management oversight of DP programmatic and administrative operations. Continues oversight of the management of all LLNL activities to assure public safety, health, safeguards, security, and environmental protection, as well as improved programmatic and institutional efficiency, cost effectiveness, and viability of the Laboratory. Contractual services funding is required for trailer leases, repairs, and utilities. Funding is required to move DOE personnel into two co-located buildings. A space recharge payable to LLNL, repairs, and moving costs as well	Provides management oversight of DP activities at LLNL to assure public safety, health, security, and environmental protection, as well as improved programmatic and institutional efficiency, cost effectiveness and viability of the laboratory. Contractual services funding is required for communications, rents and utilities, printing and reproduction, and other miscellaneous services. Communications costs include a telephone charge back to all on-site personnel, a program initiated by LLNL in FY 1995. Costs include local calls, long distance calls, and any required repairs, plus installation and/or improvements in service for existing

III. Weapons Program Direction (Cont'd):
Federal and Contractual Support (Cont'd):
Field (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office (Cont'd)	support in the area of NEPA documentation review, conduct of laboratory appraisals and self-assessment plans; and other services such as maintenance contracts for office equipment and purchase of miscellaneous office supplies.	xxx business machine rentals, is estimated to cost $1.0 million. Telecommunications costs, including telephone service, fascimile, long distance, and secure communications are estimated to cost $200,000. In addition, technical expertise is required in program and facility operations management in the following areas: assessing LLNL's ES&H, facility, quality assurance and emergency preparedness programs; classification support; assistance in conducting audits, appraisals, and facility inspections; security surveys; material control and accountability; technical surveillance; countermeasure development; and classified computer security. Continuation of personnel security support services to process clearances and reduce a backlog of reinvestigations.	and new employees. DOE/Oakland on-site presence requires the housing of Federal staff and support contractor personnel in seven trailers and a portion of Building 121. The FY 1996 budget provides for the required housing and associated costs, office machines, and utilities. Maintenance of all DOE assigned facilities is provided by LLNL; however, repairs, services, and alterations are the responsibility of the occupant and must be obtained from LLNL at a cost.
	89.0 FTE $ 15,595	88.0 FTE $ 13,638	88.0 FTE $ 14,198
Subtotal, Field	819.0 FTE $ 74,055	759.0 FTE $ 69,950	763.0 FTE $ 73,798
Subtotal, Federal and Contractual Support	1079.0 FTE $ 151,244	968.0 FTE $ 130,621	947.0 FTE $ 105,323

III. Weapons Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Los Alamos Community Assistance	Funding by Recipient: Civic Activities $ 30 Assistance Payments to Municipalities 2,654 Assistance Payments to Schools 7,525 $10,209 Fully supported the Los Alamos Community Assistance Program as defined in Section 91 of Public Law 94-187 and the Atomic Energy Community Act of 1955, as amended. $ 10,209	Funding by Recipient: Civic Activities $ 30 Assistance Payments to Municipalities 2,837 Assistance Payments to Schools 8,123 $10,990 Fully supports the Los Alamos Community Assistance Program as defined in Section 91 of Public Law 94-187 and the Atomic Energy Community Act of 1955, as amended. $ 10,990	Funding by Recipient: Civic Activities $ 30 Assistance Payments to Municipalities 2,839 Assistance Payments to Schools 8,421 $11,290 Fully supports the Los Alamos Community Assistance Program as defined in Section 91 of Public Law 94-187 and the Atomic Energy Community Act of 1955, as amended. Provides assistance to specified units of local government in the Los Alamos community associated with the Los Alamos National Laboratory. The purpose of the assistance is to (1) compensate for the lack of an industrial or commercial tax base and (2) assist in achieving financial independence. The contract utilizes the funding formula adopted in 1979 by the DOE Working Group in community assistance and includes updated base amounts to which the formulas are applied. The current contract extends through June 30, 1996. $ 11,290

III. Weapons Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
Headquarters	Provided for high cost Automated Office Support System (AOSS) equipment items; i.e., high end graphical workstations, printers, and classified local area networks.	Provides for high cost AOSS, local area network, communications, and video equipment items.	Provides for high cost AOSS, local area network, communications, and video equipment items.
	$ 250	$ 250	$ 250
Field			
Oakland Operations Office	Provided capital equipment funds to support Defense Programs' operations.	Provides capital equipment funds to support Defense Programs' operations.	Provides capital equipment funds to support Defense Programs' operations.
	$ 369	$ 104	$ 137
Subtotal, Field	$ 369	$ 104	$ 137
Subtotal, Capital Equipment	$ 619	$ 354	$ 387
Office of Emergency Management			
Operating	Funding by Object Class: Salaries/Personnel Compensation $ 1,874 Benefits 354 Travel 180 Contr. Services 11,928 $14,336 This program is managed by the Office of Nonproliferation and National Security. Federal FTE's provided for overall planning guidance for the Department's Emergency Management System including	Funding by Object Class: Salaries/Personnel Compensation $ 1,992 Benefits 320 Travel 185 Contr. Services 12,839 $15,336 This program is managed by the Office of Nonproliferation and National Security. Maintains the FY 1994 level of Federal FTE's and level of support.	Funding by Object Class: Salaries/Personnel Compensation $ 2,220 Benefits 340 Travel 205 Contr. Services 15,791 $18,556 This program is managed by the Office of Nonproliferation and National Security. Maintains the FY 1995 level of Federal FTE's and level of support.

III. Weapons Program Direction (Cont'd):
Office of Emergency Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	activities related to emergencies involving hazardous materials (radiological and non-radiological), and provided program reviews, evaluations and appraisals of specific emergency management programs to assure that emergency plans, implementing procedures, resources, and capabilities were adequate and sufficiently maintained, exercised, and evaluated. The FTE's also supported the operation and maintenance of the Headquarters Emergency Operations Center and the Technical Support Center, which serve as the central locations for communications and information gathering and dissemination for all incidents/emergencies involving the Department's facilities and operations or requiring DOE assistance.		
	Provided contractual support to continue the strengthening of the Department's Emergency Management System and directed increased efforts to the readiness assurance program by conducting and evaluating exercises involving Departmental elements and other Federal agencies. Contract funding was also needed to cover Emergency Operations Center activities including leased phone and data lines for emergency communications.	Contract support is needed to ensure that improvements to the Department's Emergency Management System continues through a strengthened program, which includes program reviews, evaluations, and appraisals. Contract support and funding is also needed to cover Emergency Operations Center activities including dedicated leased phone, data, and video lines for emergency communications.	Contract support is needed to ensure continued improvements and enhancements to the Department's Emergency Management System. This involves a program which includes program reviews, evaluations, and appraisals. Contract support and funding is also needed to cover Emergency Operations Center activities including dedicated leased phone, data, and video lines for emergency communications.
	Provided funding for contractor support to conduct emergency management system appraisals.	Provides funding to continue contractor technical support and assistance in the conduct of emergency management system appraisals.	Provide funding to continue contractor technical support and assistance in the conduct of emergency management system appraisals.
	Provided funding for contractual support to meet guidance and program review requirements of the Emergency Management System program. Provided for the Emergency Management System exercise and evaluation program to	Provides funding to continue contractual support to meet guidance and program review requirements of the Emergency Management System program. Provides for the Emergency Management System exercise and evaluation program	Provide funding to continue contractual support to meet guidance and program review requirements of the Emergency Management System program. Provides for the DOE Emergency Management System exercise and evaluation program to

III. Weapons Program Direction (Cont'd):
Office of Emergency Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	ensure effective Emergency Management planning, preparedness, and response to emergency situations. Continued training and technical assistance to the readiness assurance program and support for other exercises.	to ensure effective Emergency Management planning, preparedness, and response to emergency situations. Continues training and technical assistance to the readiness assurance program and support for other exercises.	ensure effective Emergency Management planning, preparedness, and response to emergency situations. Continues training and technical assistance to the readiness assurance program and support for other exercises.
	Continued operation and oversight of the Department's Emergency Operations Center. Provided for a departmental emergency communications system between the various DOE Emergency Operations Centers.	Continues operations and oversight of the Department's Emergency Operations Center and provides for improvements to the Department's overall Emergency Operations activity. Provides for a departmental emergency communications system between the various DOE Emergency Operations Centers.	Continue operations and oversight of the Department's Emergency Operations Center and provides for improvements to the Department's overall Emergency Operations activity. Provides for a departmental emergency communications system between the various DOE Emergency Operations Centers.
	LIQUEFIED GASEOUS FUELS SPILL TEST FACILITY (LGFSTF):	LIQUEFIED GASEOUS FUELS SPILL TEST FACILITY (LGFSTF):	LIQUEFIED GASEOUS FUELS SPILL TEST FACILITY (LGFSTF):
	Continued to provide for program policy, continuity, stability, and Headquarters and field management (Nevada Operations Office) and administration which allows for the flexibility required to supply the necessary responsiveness to prospective facility users in areas of user outreach, cost estimates, Environment, Safety and Health issues and approvals, and pre-test documentation.	Activity transferred in FY 1995 to Nonproliferation and National Security at Secretary O'Leary's direction. Federal personnel will perform planning activities with funding of $52K provided from prior year balances. LGFSTF is a user facility where user fees will pay for salaries and benefits.	Continue to provide for program policy, continuity, stability, and Headquarters and field management (Nevada Operations Office) administration that will allow for the flexibility required to supply the necessary responsiveness to prospective facility users in areas of user outreach, cost estimates, Environment, Safety and Health issues and approvals, and pre-test documentation.
	Continued to provide for the management and maintenance of the spill facility in support of potential users and the mandated collaborative DOE/EPA Clean Air Act R&D program. Continue facility baseline operations support and technical interaction with potential sponsors of research.	Continue to provide for management and maintenance of the spill facility in support of potential users and the mandated collaborative DOE/EPA Clean Air Act R&D program. Continue facility baseline operations support and technical interaction with potential sponsors of research.	Continue to provide for the management and maintenance of the spill facility in support of potential users and the mandated collaborative DOE/EPA Clean Air Act R&D program. Continue facility baseline operations support and technical interaction with potential sponsors of research.
	Completed support of collaborative DOE/EPA long-range program and for providing transfer of quality	Continue support of collaborative chemical release tests deemed important for national and public purposes.	Continue support of collaborative DOE/EPA/DOT limited cost-sharing on tests deemed important for national and

III. Weapons Program Direction (Cont'd):
Office of Emergency Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	information.		public purposes.
	Provided for a Modeling Support Center using a wind tunnel and mathematical modeling support to design field tests. ($1.287 million and 2 FTE's funded by Fossil Energy).	Provide modeling support design for future field tests.	Provide Modeling Support design for future field tests. Provide funds for initiation of facility improvements and modernization. Includes $1.6 million and 2 FTE's in support of this facility.
	27.0 FTE $ 14,336	29.0 FTE $ 15,336	30.0 FTE $ 18,556
Capital Equipment	Continued the purchase of state-of-the-art equipment for the networking of DOE-wide Field element Emergency Operations Centers and the DOE Nationwide High Frequency Radio Network. Provided funding for the purchase of state-of-the-art equipment for the networking of major DOE National Laboratory Emergency Operations Centers and to ensure continued equipment compatibility throughout Headquarters and Field element Emergency Operations Centers.	Provides funding to ensure continued equipment compatibility throughout DOE Emergency Operations Centers as well as a DOE Nationwide High Frequency Emergency Radio Network.	Provides funding to procure and test new equipment to ensure a current up-to-date system and to provide system wide maintenance and repairs.
	$ 3,000	$ 2,000	$ 1,500
Subtotal, Office of Emergency Management	27.0 FTE $ 17,336	29.0 FTE $ 17,336	30.0 FTE $ 20,056

II!. Weapons Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board	Managed by the Office of Environment, Safety and Health. Provided contractual support to the Office of Departmental Representative to the Defense Nuclear Facilities Safety Board.	Managed by the Office of Environment, Safety and Health. Continue contractual support to the Office of Departmental Representative to the Defense Nuclear Facilities Safety Board.	Managed by the Office of Environment, Safety and Health. Continue contractual support to the Office of Departmental Representative to the Defense Nuclear Facilities Safety Board.
	2.0 FTE $ 600	$ 551	$ 1,000
Use of Prior-Year Balances	-$ 484	-$ 11,499	-$ 6,400
Weapons Program Direction	1108.0 FTE $ 179,524	997.0 FTE $ 148,353	977.0 FTE $ 131,656

Other Defense Activities

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

OTHER DEFENSE ACTIVITIES

VOLUME 1

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

[Materials Support and] Other Defense [Programs] Activities
[(Including Transfer of funds)]

For Department of Energy expenses, including the purchase, construction and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense materials support, and other defense activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, [$1,849,657,000] $1,432,159,000 to remain available until expended.

Further, for these activities, $1,289,202,000, to become available for obligation on October 1, 1996 and remain available until expended.

EXPLANATION OF CHANGE

The Materials Support and Other Defense Programs Appropriation has been renamed Other Defense Activities Appropriation. The Materials Support program is abolished in FY 1996 with responsibility for the Savannah River Site (SRS) facilities moved to the Environmental Restoration and Waste Management (EM) Appropriation and surveillance and safeguarding responsibilities of Special Nuclear Materials at SRS, Fernald, Richland, Idaho, and Oak Ridge, along with some tritium activities, moved to the Stockpile Management decision unit within the Weapons Activities Appropriation.

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Other Defense Activities					
Materials Support	1,081.9	—	899.9	—	—
Verification and Control Technology	358.7	358.7	345.9	345.9	430.9
Nuclear Safeguards and Security	89.8	89.8	88.8	88.8	89.5
Security Investigations	49.0	49.0	33.4	33.4	33.2
Security Evaluation	14.9	14.9	15.5	15.5	14.7
Office of Nuclear Safety	24.9	24.9	21.7	21.7	24.7
Worker and Community Transition	100.0	200.0	115.0	115.0	100.0
Fissile Materials Control and Disposition	—	33.7	50.0	50.0	70.0
Naval Reactors	754.4	754.3	723.6	723.6	682.2
Subtotal, Other Defense Activities	2,473.6	1,525.3	2,293.8	1,393.9	1,445.2
Savannah River Pension Refund	-100.0	—	-40.0	—	—
Use of Prior Year Balances & Other Adjustments	-413.2	-124.0	-404.1	-67.6	-13.0
Total, Other Defense Activities	1,960.4	1,401.3	1,849.7	1,326.3	1,432.2

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

MATERIALS SUPPORT

The Materials Support program is abolished in FY 1996 with responsibility for the Savannah River Site (SRS) facilities moved to Environmental Restoration and Waste Management (EM) and surveillance and safeguarding responsibilities of Special Nuclear Materials at SRS, Fernald, Richland, Idaho, and Oak Ridge, along with some tritium activities, moved to the Stockpile Management decision unit within the Weapons Activities Appropriation.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES

OVERVIEW

VERIFICATION AND CONTROL TECHNOLOGY

The Verification and Control Technology (V&CT) program is key in supporting the Administration's policy of strengthening the ability of the United States to respond to the threat to national security and to world peace posed by the proliferation of weapons of mass destruction, particularly nuclear. The V&CT program includes our efforts to support arms control treaty negotiations, implementation and compliance verification activities and related responsibilities mandated by the Atomic Energy Act, as amended, other legislation, and Presidential Directives.

The V&CT program supports the Office of Nonproliferation and National Security. The goals of the Office of Nonproliferation and National Security are to prevent the proliferation of nuclear weapons, ensure national security, foster public trust and accessibility, increase effectiveness, and strengthen the infrastructure. This office comprises the activities of the Offices of Arms Control and Nonproliferation, Research and Development, Energy Intelligence, Security Affairs, and Emergency Management. Budgets of the first three offices are provided by V&CT. The goal of the Office of Arms Control and Nonproliferation is to reduce the threat of proliferation by integrating and orchestrating the Department's assets and efforts, including those of its national laboratories and contractors, in providing major policy and technical support to U.S. Government foreign policy and national security objectives and to the international arms control and nonproliferation communities. The Office of Research and Development's goal is to enhance U.S. national security by developing a broad range of advanced technologies tailored specifically for proliferation detection and arms control verification, and to make these technologies available to other U.S. government agencies and appropriate international activities and bodies. The Office of Energy Intelligence, and certain activities of the Office of Security Affairs, and the Office of Emergency Management provide intelligence, counterintelligence and threat assessment analyses for senior departmental and intelligence community policy officials and program managers.

A surge in arms control and nonproliferation treaties and agreements has resulted from and contributed to the extraordinary changes in international relations that have occurred in the last several years. As a result of this transformation in the global landscape, the way in which the United States must determine its national security requirements has dramatically changed. However, the euphoria of 1989 and the demise of the Soviet Union has evolved into a more sober recognition of the dangers that still exist and of the determination and dedication that will be required to achieve international stability as well as a peaceful world community. Even as we are still adapting to the dissolution of the Soviet Union new troubles have flared: the continued combativeness of Iraq; the lack of viable nuclear materials protection, control and accounting in Russia, and continued proliferation of weapons of mass destruction and the means to deliver them, such as the current situation in North Korea illustrates. While the direct threat to the United States from the Soviet Union has been significantly reduced, the number of nations and regions that have potential impact on U.S. national security have increased. Thus, arms control and nonproliferation negotiations, agreements and treaties, and related activities, will have a continuing critical role to play in U.S. national security policy. Simultaneously, the proliferation of nuclear and other weapons of mass destruction and the means to deliver them have increased the importance of nonproliferation issues to U.S. national security.

Priority objectives of the Office of Arms Control and Nonproliferation are focused on assisting in the implementation of presidentially directed initiatives and agreements on arms control and nonproliferation. These priorities include: securing nuclear materials and expertise in the former Soviet Union (FSU); limiting weapons-usable fissile materials; establishing transparent and irreversible nuclear reductions; strengthening the international nuclear nonproliferation regime; and controlling nuclear exports. This includes supporting international security commitments of the Administration in the Newly Independent States (NIS) of the FSU, the International Atomic Energy Agency (IAEA) and the Democratic Peoples Republic of Korea (DPRK). Program activities are carried out by Arms Control and Nonproliferation's four subordinate divisions: Analytical Support, Nonproliferation Policy, Export Control Operations, and International Safeguards. In addition, the Office of Arms Control and Nonproliferation draws upon a variety of other technical assets and the expertise resident in other Department of Energy program offices and the national laboratories.

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Overview - VERIFICATION AND CONTROL TECHNOLOGY (Cont'd)

The Office of Research and Development manages the Department of Energy's supporting research and development for treaty verification and development of proliferation detection technologies. Major program segments in the Office's technology program include Onsite Systems, Regional Monitoring Systems, Remote Sensing Systems, and Advanced Systems. A major influx of funding resulted from the submission to Congress of a Proliferation Detection Technology Program Plan. This plan outlines major programmatic changes from the traditional treaty verification technology production to detection technology for proliferation for weapons of mass destruction. The Office of Research and Development has also been given the responsibility for research in support of a Comprehensive Test Ban Treaty. These additional responsibilities and broadened charter have imposed more dynamic requirements and consequently a correspondingly more dynamic program.

The Office of Energy Intelligence, and certain program activities of the Office of Safeguards and Security and the Office of Emergency Management, include analytical support, counterintelligence, and threat assessment. These offices are responsible for providing intelligence analyses and estimates on the activities, capabilities, and intentions of foreign governments for the Secretary of Energy, senior department policy makers, and the intelligence community; deterring and neutralizing foreign intelligence service actions in the U.S. to acquire classified or sensitive departmental information; and providing threat assessment support to both the department's headquarters and field elements.

Priorities reflected in the FY 1996 V&CT budget are:

- Securing nuclear materials and expertise in states of the Former Soviet Union by implementing Material Protection Control and Accounting through a government-to-government agreement for cooperation and by the laboratory-to-laboratory cooperation program. In both of these programs, the Department of Energy will utilize the unique capabilities of the national laboratories to work in cooperation with Russia to develop systems of protection, control and accounting and an indigenous source of technical expertise. Prevention of the "brain drain" from the FSU is implemented through cooperative efforts with the International Science and Technology Center (ISTC) in Moscow and other cooperative efforts including the Industrial Partnering Program; and implementing the U.S./Russian agreement on the exchange of technical information between laboratories on the safety and security of nuclear weapons and nuclear materials

- Limiting weapon-useable fissile material by: Controlling production and use of fissile material by initiating and promoting regional fissile material control activities; by shutting down plutonium production reactors in Russia; and by negotiating an international fissile material cut-off convention which would eliminate weapons-useable fissile material production worldwide. Other fissile material control activities include: fostering regional approaches to spent fuel disposition including storage; limiting stockpiles and not encouraging the civil use of plutonium, limiting the civil use of Highly Enriched Uranium (HEU) primarily by expanding the scope and implementation of the Reduced Enrichment for Research and Test Reactors (RERTR) program and reducing stockpiles of HEU and plutonium by aggressive and innovative "buy-back," "swaps," or other disposition programs, including returning foreign spent research reactor fuel of U.S. origin and ensuring the U.S. is prepared to accept foreign origin weapons useable materials to reduce the danger of proliferation when the President deems this action necessary.

- Establishing transparent and irreversible nuclear weapon reductions by: exchanging on a reciprocal basis data on inventories of nuclear weapons and materials from dismantled weapons; establishing the means to confirm or verify that data, by monitoring each other's nuclear warhead production activities and expediting the dismantlement of nuclear weapons no longer needed for deterrent purposes; conducting reciprocal bilateral inspections of nuclear components from dismantled warheads as well as excess fissile materials no longer needed for national security purposes; expanding U.S./Russian nuclear weapons reductions beyond those mandated by START II; and eventually extending those efforts to include the other nuclear weapons states.

- Strengthening the international nuclear nonproliferation regime by: promoting adherence to the Nuclear Nonproliferation Treaty (NPT), and in particular, supporting efforts to eliminate weapons programs in the rogue states such as North Korea and Iraq; expanding the Department's political and programmatic support to the International Atomic Energy Agency (IAEA) by working to increase the effectiveness and efficiency of the IAEA, and in particular, its safeguards programs; facilitating IAEA inspection of excess fissile materials in Russia and the United States; implementing the results of achievement of an indefinite extension of the NPT after the extension conference in April 1995; promoting regional nonproliferation and confidence-building measures, and fostering the use of arms control and verification as an approach to solving regional tensions; and complete negotiations on a Comprehensive Test Ban Treaty.

- Controlling nuclear exports by the United States and other nuclear supplier states by assisting the FSU in effectively establishing the means

to control their exports, by reforming U.S. statutory licensing requirements, by strengthening multilateral supplier initiatives and guidelines and by promoting expanded information sharing and analysis, particularly by using integrated, automated systems.

- Continuing the establishment of a robust Proliferation Technology Development program at the Department of Energy's national laboratories consistent with the increasing importance to U.S. national security interest of the proliferation of nuclear and other weapons of mass destruction and the means to deliver them.

- Continuing a baseline studies program at the national laboratories in support of broader U.S. nonproliferation and arms control objectives, e.g., analysis of effectiveness of verification and transparency measures and regimes associated with treaties and agreements, including the chemical and biological, as well as nuclear treaties.

- Continuing to support arms control verification technology development programs at the Department of Energy's national laboratories as required to support U.S. arms control and nonproliferation priorities, objectives, and activities.

- Continuing to support U.S. activities aimed at assisting Russia in safely dismantling and transporting nuclear warheads, and both Russian and other former Soviet Union with emergency response capabilities.

- Supporting implementation of the IAEA's long-term monitoring plan in Iraq, using the unique capabilities of the Department of Energy's national laboratories.

- Technical analyses addressing increased global nuclear proliferation challenges.

- Support in Intelligence Community estimates of activities of potential weapons states.

- Assessments of actual or potential threats to the Department's facilities, including threats involving nuclear materials; and counterintelligence analyses.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

PERFORMANCE/OUTPUT MEASURES

Arms Control and Nonproliferation:

1. The number of facilities at which Russia establishes effective MPC&A programs over its nuclear weapons and materials increases.

2. The number of nuclear smuggling incidents decreases.

3. The number of approved and completed ISTC projects increases.

4. The number of exchanges of technical information of nuclear warhead safety and security increases.

5. Number of nuclear weapon states remains constant or is reduced.

6. Number of NPT adherents increases.

7. Smooth FSU warhead reductions to START II levels by 2003, and development of the framework to implement U.S. policy for further possible reductions.

8. Improved safety and security of FSU nuclear warheads.

9. Transparent and irreversible dismantlement of FSU nuclear warheads increases.

10. Increased technical dialogue on arms control and nonproliferation with proliferant states.

11. The number of inspections of fissile materials removed from nuclear weapons in Russia and the United States increases.

12. International traffic of HEU/PU decreases.

13. Number of potential proliferant states decreases.

14. Reducing the number of unilateral nuclear controls and replacing them with multilateral controls.

15. Increasing Nuclear Suppliers Group membership to include key supplier states.

16. Establishing an effective export control system in the FSU.

17. Encourage/Increase the use of DOE Part 810 "fast track" authorizations for safety related assistance.

18. Complete negotiation of a Comprehensive Test Ban Treaty.

Research and Development:

1. Number of proliferation detection and arms control verification technologies under development.

2. Number of successful prototype demonstrations.

3. Number of technology transfer agreements, CRADAs, and dual-use spin-offs.

4. Level of confidence in worldwide nuclear explosion surveillance capability.

5. Contribution of DOE to the national capability for early detection of the proliferation of weapons of mass destruction.

6. Improvement in United States Government (USG) ability to verify a Comprehensive Test Ban Treaty.

Intelligence:

1. Provide 215 intelligence briefings for program and policy officials.

2. Publish 388 current intelligence products and studies.

3. Provide nuclear weapons-related training for 305 intelligence community personnel in support of U.S. Government nonproliferation initiatives.

4. Conduct 59 assessments for use by national and local law enforcement.

5. Provide 60 counterintelligence awareness training sessions in support of counterespionage initiatives.

Overview - VERIFICATION AND CONTROL TECHNOLOGY (Cont'd)

6. Complete 12 counterintelligence inquiries.

7. Conduct 100 counterintelligence travel briefings/debriefings.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Verification and Control Technology

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Nonproliferation and Verification					
Research and Development					
Operating Expenses	$209,719	$215,000	-$2,463	212,537	212,642
Capital Equipment	13,500	13,500	0	13,500	13,500
Construction	8,515	0	0	0	0
Subtotal	$231,734	$228,500	-$2,463	$226,037	$226,142
Arms Control					
Operating Expenses	$81,259	$76,251	-$125	76,126	$138,391
Capital Equipment	373	673	0	673	23,973
Subtotal	$81,632	$76,924	-$125	$76,799	$162,364
Intelligence					
Operating Expenses	$43,656	$41,431	-$70	41,361	$40,936
Capital Equipment	1,700	1,700	0	1,700	1,400
Subtotal	$45,356	$43,131	-$70	$43,061	$42,336
Subtotal, Verification and Control Technology	$358,722	$348,555	-$2,658	$345,897	$430,842
Use of Prior Year Balances	-4,800	-5,477	-864	-6,341	0
TOTAL PROGRAM	$353,922	$343,078	-$3,522	$339,556	$430,842
Summary					
Operating Expenses	$334,634	$332,682	-$2,658	$330,024	$391,969
Capital Equipment	15,573	15,873	0	15,873	38,873
Construction	8,515	0	0	0	0
Subtotal, Program	$358,722	$348,555	-$2,658	$345,897	$430,842
Use of Prior Year Balances	-4,800	-5,477	-864	-6,341	0
TOTAL PROGRAM	$353,922	$343,078	-$3,522	339,556	$430,842
STAFFING (FTEs)	143	136	0	136	135

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Verification and Control Technology

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 78,358	$ 69,870	$ 0	$ 69,870	$ 69,210
Los Alamos National Laboratory	58,534	57,591	0	57,591	55,153
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 136,892	$ 127,461	$ 0	$ 127,461	$ 124,363
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 3,847	$ 2,699	$ 0	$ 2,699	$ 2,700
Brookhaven National Lab	4,821	4,578	0	4,578	4,400
Environmental Measurements Lab	125	125	0	125	125
Subtotal, CHICAGO OPERATIONS OFFICE	$ 8,793	$ 7,402	$ 0	$ 7,402	$ 7,225
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 4,805	$ 3,986	$ 0	$ 3,986	$ 4,500
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 4,037	$ 4,164	$ 0	$ 4,164	$ 4,050
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 5,029	$ 5,551	$ 0	$ 5,551	$ 5,190
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 17,970	$ 14,425	$ 0	$ 14,425	$ 17,880
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 42,964	$ 39,152	$ 0	$ 39,152	$ 40,980
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Technology Center	$ 2,892	$ 2,265	$ 0	$ 2,265	$ 2,550
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 8,352	$ 20,543	$ 0	$ 20,543	$ 19,404

FIELD OFFICE FUNDING BY SITE - Verification and Control Technology (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALL OTHER	$ -2,600	$ -2,459	$ 0	$ -2,459	$ 0
TOTAL	$ 229,134	$ 222,490	$ 0	$ 222,490	$ 226,142

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Verification and Control Technology

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Mound Plant	$ 100	$ 100	$ 0	$ 100	$ 0
Pantex Plant	60	260	0	260	260
Los Alamos National Laboratory	17,747	17,391	0	17,391	27,274
Sandia National Laboratories	8,303	11,854	0	11,854	20,123
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 26,210	$ 29,605	$ 0	$ 29,605	$ 47,657
CHICAGO OPERATIONS OFFICE					
New Brunswick Lab	$ 0	$ 0	$ 0	$ 0	$ 135
Argonne National Lab (East)	4,195	3,865	0	3,865	5,460
Brookhaven National Lab	1,400	1,406	0	1,406	6,021
Subtotal, CHICAGO OPERATIONS OFFICE	$ 5,595	$ 5,271	$ 0	$ 5,271	$ 11,616
IDAHO OPERATIONS OFFICE					
Idaho Operations Office	$ 80	$ 80	$ 0	$ 80	$ 0
Idaho National Engineering Lab	100	101	0	101	111
Subtotal, IDAHO OPERATIONS OFFICE	$ 180	$ 181	$ 0	$ 181	$ 111
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 9,876	$ 700	$ 0	$ 700	$ 250
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 4,593	$ 4,717	$ 0	$ 4,717	$ 8,847
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 4,580	$ 4,355	$ 0	$ 4,355	$ 9,947
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 17,252	$ 16,150	$ 0	$ 16,150	$ 22,759

FIELD OFFICE FUNDING BY SITE - Verification and Control Technology (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Ecology Lab	$ 60	$ 0	$ 0	$ 0	$ 0
Savannah River Operations Office	2,091	243	0	243	300
Subtotal, SAVANNAH RIVER OPERATIONS OFFICE	$ 2,151	$ 243	$ 0	$ 243	$ 300
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 11,190	$ 15,652	$ 0	$ 15,652	$ 17,387
Office of Scientific & Technical Information	0	50	0	50	50
Subtotal, WASHINGTON HEADQUARTERS	$ 11,190	$ 15,702	$ 0	$ 15,702	$ 17,437
ALL OTHER	$ -1,595	$ -2,414	$ -125	$ -2,539	$ 43,440
TOTAL	$ 80,032	$ 74,510	$ -125	$ 74,385	$ 162,364

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Intelligence Activities

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 3,210	$ 3,040	$ 0	$ 3,040	$ 3,040
Los Alamos National Laboratory	5,395	5,115	0	5,115	5,115
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 8,605	$ 8,155	$ 0	$ 8,155	$ 8,155
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 380	$ 360	$ 0	$ 360	$ 360
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 1,250	$ 1,190	$ 0	$ 1,190	$ 1,190
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 6,550	$ 6,225	$ 0	$ 6,225	$ 6,225
OAK RIDGE OPERATIONS OFFICE					
K-25 Site	$ 3,640	$ 3,450	$ 0	$ 3,450	$ 3,450
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 3,580	$ 3,395	$ 0	$ 3,395	$ 3,395
Richland Operations Office	145	145	0	145	145
Subtotal, RICHLAND OPERATIONS OFFICE	$ 3,725	$ 3,540	$ 0	$ 3,540	$ 3,540
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 8,664	$ 8,210	$ 0	$ 8,210	$ 8,210
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Technology Center	$ 400	$ 400	$ 0	$ 400	$ 400
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 12,072	$ 11,461	$ 0	$ 11,461	$ 10,736
Office of Scientific & Technical Information	70	70	0	70	70

FIELD OFFICE FUNDING BY SITE - Intelligence Activities (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Subtotal, WASHINGTON HEADQUARTERS	$ 12,142	$ 11,531	$ 0	$ 11,531	$ 10,806
ALL OTHER	$ -600	$ -380	$ 0	$ -380	$ 0
TOTAL	$ 44,756	$ 42,681	$ 0	$ 42,681	$ 42,336

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Verification and Control Technology

FY 1995 Appropriation	$ 339,556
- Adjustment - Use of Prior Year Balances to Offset FY 1995 New Budget Authority	$ 6,341
FY 1995 Adjusted	$ 345,897
- Transfer	$ 0
FY 1995 Comparable	$ 345,897
<u>Nonproliferation and Verification Research and Development</u>	
Onsite Systems - Develop detection technologies to characterize underground facilities associated with the proliferation of weapons of mass destruction	$ +925
Regional Monitoring Systems - Implement a multi-faceted program for monitoring technologies for a comprehensive nuclear test ban	$ +3,657
Remote Sensing Systems - Complete assembly and integration phase of the Fast On-orbit Recording of Transient Events satellite experiment	$ -1,116
Advanced Systems - Complete several individual advanced systems projects	$ -3,361
<u>Arms Control</u>	
Reduced Enrichment Research and Test Reactor (RERTR) Program - Additional funding for development of high density low enriched uranium (LEU) fuel	$ +1,700
Materials Protection, Control, and Accounting - Additional funding for cooperative Laboratory-to-Laboratory and government-to-government programs for establishment of effective Russian nuclear material security systems and export controls as well as cooperation with GAN, the Russian nuclear regulatory agency, to develop a nuclear tracking system	$ +47,000
Treaties and Agreements - Reflects Departmental reductions including reductions for contracting reform and prior year balances	$ -1,435
International Security - Funding reserved for international security commitments of the Administration either in the Newly Independent States (NIS) of the former Soviet Union or in the Democratic Peoples Republic of Korea (DPRK)	$ +15,000
Capital Equipment - Increase in funding to support purchase of equipment for the laboratory-to-laboratory program and the Reduced Enrichment and Test Reactor (RERTR) program	$ +23,300

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Verification and Control Technology

Intelligence

Operating Expenses - Reflects Departmental reductions including reductions for contracting reform	$ -425
Capital Equipment - Decrease reflects a funds shift to the operating budget, due to the reduced need to purchase items that meet the capitalization criteria prescribed in the DOE financial accounting policy.....	$ -300
FY 1996 Congressional Budget Request	$ 430,842

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

VERIFICATION AND CONTROL TECHNOLOGY

I. Preface: Nonproliferation and Verification Research and Development

The mission of the Office of Research and Development, in directing the Department's Nonproliferation and Verification Research and Development Program, is to conduct applied research, development, tests, and evaluation of systems and technologies. Included in this mission are the design and fabrication for actual deployment of sensor systems needed for treaty verification, proliferation detection, nuclear warhead dismantlement initiatives, and intelligence activities. Also included is support for the commercialization of developed technologies as well as the timely transfer of prototyped and tested systems to users associated with the United States Government. The Office of Research and Development further supports Public Law 102.564, "Small Business Research and Development Enactment Act" of 1992.

The Onsite Systems program encompasses onsite monitoring and radiation detection technology. The radiation detection technology will develop hardware and analytical tools that advance the state-of-the-art in radiation sensor technology to support nonproliferation, arms control verification, dismantlement, and materials control accountability of special nuclear materials. Technology advances will lead to reliable, compact, rugged sensors and systems that can be operated autonomously. Research and development will continue to develop a room temperature high resolution detector-grade material.

Warhead dismantlement research on detection technologies includes the development of system prototypes to promote arms control policy initiatives in the areas of transparency and unilateral initiatives to provide confidence building measures associated with nuclear warhead dismantlement and long term monitoring of nuclear materials.

Cooperative monitoring activities will focus on sensor development and integration of unattended inspection technology into policy requirements for bilateral and multilateral nonproliferation treaties and agreements on weapons of mass destruction. In fiscal years 1995/1996, developed technologies will validate the status of declared items and the operations of nuclear warhead dismantlement facilities. Monitoring systems will be transparent to the host facility and will provide confidence building measures.

The Airborne Multisensor Pod System (AMPS) will focus on the development, integration, and demonstration of remote sensor technology and will collect data which can be used for data fusion research. A suite of technologies will be used to acquire multispectral, synthetic aperature radar, gaseous, and particulate data from an airborne platform over selected targets.

The program is also responding to the changing global political environment by developing technology to detect and characterize underground structures and/or facilities associated with the production of weapons of mass destruction. The onsite geophysical program includes the technology development of data fusion techniques for enhanced resolution capabilities to locate and characterize underground structures.

Regional Monitoring Systems include seismic verification and effluent detection and analysis. The Office of Research and Development has restructured its fiscal year 1995 program (formerly seismic verification) to carry out the research and development necessary to provide U.S. Government agencies responsible for monitoring and/or verifying compliance with a Comprehensive Test Ban Treaty (CTBT) with technologies, algorithms, hardware, and software for integrated systems to detect, locate, identify, and characterize nuclear explosions at the thresholds and confidence levels that meet U.S. Government requirements in a cost-effective manner. The areas include seismic monitoring research, ocean monitoring research, radionuclide atmospheric monitoring research, on-site inspection research, and automated data processing research (to transition the research results into operational systems). DOE has made a commitment to a cooperative program that draws upon the core competencies of the national laboratories and upon the strengths of other agencies and contractors. Primary users of the Department's research and development efforts will be the national and international treaty monitoring communities.

I. Nonproliferation and Verification Research and Development (Cont'd)

Effluent detection and analysis research is critical for detecting and characterizing the proliferation of weapons development technologies outside the U.S. borders. This is an area of growing national interest as more nations become capable of developing nuclear weapons. Effluents (vapors, waste streams, particulates) often represent the only externally observable signatures of a clandestine weapons development program. The identification of a proliferant's research, development, production, testing or storage activities can be accomplished by characterizing the emissions from a suspect site or activity and can provide detailed information on the status and sophistication of the proliferant's weapons program. Programmatic activities in this area include the development of both laboratory-based and real time, field-portable systems which offer high target compound specificity, low limits of detection, and the capability to detect multiple signatures which provides high reliability and therefore high credibility in assessing a proliferant's weapons program. Activities within this program have the potential for use in security, safeguards, and intelligence collection scenarios.

Remote Sensing Systems focus upon satellite instrumentation. The program provides for the design, development, fabrication, and operational support of the nuclear explosion monitoring sensors needed to meet U.S. requirements concerning the detection, identification, location, and characterization of nuclear explosions in the atmosphere and in space. The program has three primary objectives: (1) treaty verification; (2) proliferation detection; and (3) war fighting support. The Department's satellite flight systems provide continuous worldwide surveillance and are currently deployed on the Global Positioning System and other military satellites. The Department maintains staff, facilities, procedures, and documentation to allow for proper design, procurement, integration, testing and traceability. The remote sensing systems program will also be emphasizing development of sensors for detecting nuclear proliferation activities prior to device detonation. The satellite instrumentation program additionally serves as an advantageous test bed for intelligence related/dual use sensor systems.

Advanced Systems cover laser-based remote detection, multisensor systems research, and exploratory research. The Chemical Analysis by Laser Interrogation of Proliferation Effluents (CALIOPE) program is conducting research and development in the area of advanced laser-based techniques for detecting trace levels of airborne effluents. Under CALIOPE novel techniques to achieve state-of-the-art detection limits in remote sensing are being investigated. Multisensor systems research will develop advanced computer processing methods for converting mass amounts of data into information in a timely manner. Multisensor systems research will also explore various methods and levels of data fusion to exploit potential synergies in multisensor data collection by employing neural networks, expert systems, object recognition, feature extraction, and maximum likelihood estimators. Current research and development at the Radar Algorithm Development Laboratory (RADL) has the potential to dramatically improve treaty verification and proliferation detection capabilities. Exploratory research involves research in new and novel technologies to meet nonproliferation needs and requirements.

II. A. Summary Table: Nonproliferation and Verification Research and Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Onsite Monitoring	$ 5,800	$ 0	$ 0	$ 0
Satellite Instrumentation	90,304	0	0	0
Seismic Verification	16,260	0	0	0
Sample/Debris Detection and Analysis	32,660	0	0	0
Non-seismic Verification	4,370	0	0	0
Directed Energy Verification	100	0	0	0
Technology Development	49,045	0	0	0
Radiation Detection Technology	10,180	0	0	0
Onsite Systems	0	40,047	40,972	925
Regional Monitoring Systems	0	38,640	42,297	3,657
Remote Sensing Systems	0	82,540	81,424	-1,116
Advanced Systems	0	49,310	45,949	-3,361
Program Direction	1,000	2,000	2,000	0
Capital Equipment	13,500	13,500	13,500	0
Construction	8,515	0	0	0
Use of Prior Year Balances	-2,600	-3,547	0	3,547
Total, Nonproliferation and Verification Research and Development	$ 229,134	$ 222,490	$ 226,142	$ 3,652

II. B. Laboratory and Facility Funding Table: Nonproliferation and Verification Research and Development

Argonne National Lab (East)	$ 3,847	$ 2,699	$ 2,700	$ 1
Brookhaven National Lab	4,821	4,578	4,400	-178
Washington Headquarters	8,352	20,543	19,404	-1,139
Nevada Operations Office	4,037	4,164	4,050	-114
Environmental Measurements Lab	125	125	125	0
Idaho National Engineering Lab	4,805	3,986	4,500	514
Lawrence Livermore National Lab	42,964	39,152	40,980	1,828
Los Alamos National Laboratory	58,534	57,591	55,153	-2,438
Oak Ridge National Lab	5,029	5,551	5,190	-361
Pacific Northwest Lab	17,970	14,425	17,880	3,455
Sandia National Laboratories	78,358	69,870	69,210	-660
Savannah River Technology Center	2,892	2,265	2,550	285
All Other	-2,600	-2,459	0	2,459
Total, Nonproliferation and Verification Research and Development	$ 229,134	$ 222,490	$ 226,142	$ 3,652

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Nonproliferation and Verification Research and Development			
Onsite Monitoring	Onsite monitoring activities continued at a reduced level. Damage and loss mechanisms that determine how a shock wave evolves into a seismic wave was identified by experimentation and numerical modeling in order to estimate the characteristics of a clandestine explosion in an uncalibrated region. Systems for site inspections were identified and associated software and procedures were developed for deployment on short notice. Developed advanced signal processing techniques for the detection and characterization of buried structures.	Transfer to Onsite Systems.	Transfer to Onsite Systems.
	$ 5,800	$ 0	$ 0
Satellite Instrumentation	Fabrication of GPS Block IIR flight systems continued at the rate of four per year. DSP payload fabrication activities continued. Integration activities continued to be supported. Integration of MOXE were supported. Analytical activities continued on the satellite radiation environment and spacecraft anomalies.	Transfer to Remote Sensing Systems.	Transfer to Remote Sensing Systems.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Satellite Instrumentation (Cont'd)	Operational support to deployed systems continued; launch support for spacecraft carrying DOE payloads continued. Selected development of radiation hardened microelectronics continued. Development of new packaging technologies for VLSI electronics continued. Development of sensor concepts continued. Development of technologies and subsystems continued. Payload test and checkout activitas continued. FORTE hardware was fabricated, assembled, and calibrated. Software designs were finalized. The program to develop technologies for detecting pre-test weapons-of-mass-destruction proliferation activities using space-based sensors continued.		
	$ 90,304	$ 0	$ 0
Seismic Verification	Activities continued in seismic research to develop baseline analytical data and technologies to detect, locate, and identify seismic signals as natural (earthquake) or man made (explosion). Conducted rigorous statistical analysis of seismic and acoustic experimental results.	Transfer to Regional Monitoring Systems.	Transfer to Regional Monitoring Systems.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Seismic Verification (Cont'd)	Developed and tested seismic and related communication equipment. Developed analytic models of hydro-acoustic signals from an explosion detonated at or near the ocean surface. Acquired reports and data from Russian scientists on their nuclear tests. Developed network monitoring parameters for active tectonic provinces to make improved estimates of the utility of global monitoring systems. Developed and implemented software and completed hardware acquisition for multilab distributed data base. Conducted verification issues symposium for laboratory and university researchers. Maintained for AFTAC, the PNET local seismic net system. Investigated explosion source region phenomenology and related to far-field seismic and acoustic measurements. Supported university based seismic research. Investigated the feasibility of off-shore hydro-acoustic monitoring for clandestine nuclear testing. Defined off-shore network and performed data analysis. Analysis of the data collected was completed and a draft report was circulated for comment.		

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Seismic Verification (Cont'd)	$ 16,260	$ 0	$ 0
Sample/Debris Detection and Analysis	Correlated data to detection technologies and initiated review with technologies under development. Continued laser development and standoff sensor development for effluent species identification. As part of the laser program, measurements of optical characteristics of potential signature compounds continued including collaboration with Russian scientists. Developed laboratory techniques for effluent analysis emphasizing ultrasensitivity and selectivity specific to signature chemicals indicative of proliferaton of weapons of mass destruction. Continued development and began test and evaluation of advanced effluent sampling and real time analysis systems and techniques. Modification to the spectrometer was performed for use from an airborne platform; a compact, tunable mid-IR laser was developed. A laboratory based UV fluorescence multispectral system was built and tested as part of the laser program. As part of the laser program, integration and testing of laser beam/signal collection steering system began; spectral pattern recognition system was developed and tested.	Transfer to On-site Systems, Regional Monitoring Systems and Advanced Systems.	Transfer to On-site Systems, Regional Monitoring Systems and Advanced Systems.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Sample/Debris Detection and Analysis (Cont'd)	Ground tests of the 75-110 GHz radiometer was conducted; a 210-300 GHz multispectral radiometer was fabricated. Developments in accelerator mass spectrometery for ultratrace analysis continued. Submicron beam line development efforts expanded. Applications testing compounds of interest samples was completed. Modifications to the small scale Ion Trap/SIMS was completed. Improvement of methods and technologies to improve trace chemical radionuclide detection was conducted. Developed technologies for field deployable application to support long-term monitoring regimes. Isotopic ratio measurements were made more accurate with improved excitation and analysis techniques. Project was completed. Construction of the centrifugal concentrator was completed and performance testing began. Microchip liquid chromatograph performance was evaluated. Development schedule and scope of selective coatings technology was accelerated and broadened. Measurement of krypton by photon burst mass spectrometry was proven.		

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Sample/Debris Detection and Analysis (Cont'd)	Activities continued in the optogalvanic and resonance ionization detection of uranium isotopes. Methods for suspending particles of interest were developed and tested. Determination of electrophoretic behavior of particles of interest under various operating conditions were made. Calculations of required performance of signature exploitation systems intended to fill knowledge gaps for each study were refined. Proposed functional requirements for technologies were reported. Improvements to the air sampler design were identified and modifications made. Laboratory chemical analysis methodology development continued. Design of an integrated field sampler/analyzer began. Assembly and modification of an electrostatic precipitator began. Sample collector was tested and preliminary analysis of samples began. Component separation and characterization, and ion microscope analysis of samples continued. Field unit was designed, fabricated, and ground-based tested.		
	$ 32,660	$ 0	$ 0
Non-seismic Verification	Development activities at RADL were expanded in scope with additional computing facilities and capabilities.	Transfer to Advanced Systems.	Transfer to Advanced Systems.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Non-seismic Verification (Cont'd)	Advanced remote explosion characterization activities continued.		
	Developed and demonstrated the use of atmospheric monitoring techniques to detect, locate, and assist in identification of under-and above-ground chemical or nuclear explosions from natural events, i.e., lightning or earthquakes. These activities supported proliferation detection, future CTB negotiations, the TTB, PNE, and LTB treaties.		
	$ 4,370	$ 0	$ 0
Directed Energy Verification	Development of an off-axis laser sensor for unattended cooperative detection was completed.	Terminated in fiscal year 1994.	Terminated in fiscal year 1994.
	$ 100	$ 0	$ 0
Technology Development	Advanced concepts research was further expanded. Airborne multisensor pod system development continued. Multisensor data fusion and analytical process development was also expanded. Developed systems to verify disposition of SNM from strategic weapon dismantlement.	Transfer to On-site Systems, Regional Monitoring Sytems, and Advanced Systems.	Transfer to On-site Systems, Regional Monitoring Sytems, and Advanced Systems.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Development (Cont'd)	Developed technologies to determine the status of known or suspected chemical weapons and production facilities to support bilateral and multilateral agreements. Developed technologies for the identification and screening of chemical weapons to avoid the need for direct sampling. Developed sensitive field methods for detecting and identifying compounds associated with chemical weapons activities. Developed real-time monitors to detect and identify CW related chemicals during weapons destruction operations. Developed technically advanced means of verifying accountability and chain of command of SNM weapons components and monitoring equipment. Development of technology applicable to the chemical weapons convention and other agreements continued in remote spectroscopy and nondestructive testing. Applied neural network technology to seismic event identification problems. Adapted ground penetrating radar to sub-surface structure location. Adapted airborne magnetometers for aerial surveillance of suspect sites for hidden nuclear production facilities. Identified candidate sites for test surveys. Performed field experiments and analyses to develop operational prototype system.		

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Development (Cont'd)	Sensor selection and system integration continued to demonstrate technologies for long-term monitoring, unattended inspection and verification applications. Developed field deployable sensor technology to support nonproliferation, on-site cooperative inspections and long-term monitoring regimes. Portal monitoring systems were developed to detect movement of weapons of mass destruction. Modular integrated monitoring system was developed for continuous monitoring of materials and components. Developed nuclear weapon dismantlement verification techniques for confidence building and technologies for SNM accounting, controls, and physical protection.		
	$ 49,045	$ 0	$ 0
Radiation Detection Technology		Transfer to Onsite Systems.	Transfer to Onsite Systems.
	Undertook high risk, high payoff research and development to develop new materials for detection and characterization of radiation sources, i.e., aluminum antimodide, gallium arsenide. Began prototype development to demonstrate technologies of advanced systems for multiscenario proliferation detection applications.		

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Radiation Detection Technology (Cont'd)	Developed nuclear sensors suitable for use in Portal Monitoring Systems and Unattended Ground Sensors were developed to support nonproliferation initiatives and on-site cooperative inspections. Demonstrated of HEU/LEU array techniques to support non-proliferation initiatives.		
	$ 10,180	$ 0	$ 0
Onsite Systems		Conduct research and development on new materials to detect radiation technology advances which will lead to reliable, compact, rugged, low power sensors and systems that can be operated autonomously.	Conduct research and development on the material production and fabrication of detectors. Investigate new candidate materials.
		Development of prototype systems to demonstrate advanced technology to support nonproliferation and arms control verification applications.	Test and evaluation of prototype systems to demonstrate concepts and advanced technology.
		Research and development will continue to develop a room temperature high resolution gamma ray dectector.	Continue FY 1995 program.
		Develop detection technologies and prototype systems to support nuclear weapon disarmament and nuclear related treaties and reciprocal agreements.	Develop detection technologies and prototype systems to support nuclear weapon disarmament and nuclear related treaties and reciprocal agreements. Support joint R&D with Former Soviet Union and Russian laboratories.
		Investigate alternative passive and active non-destructive assay (NDA) methods to characterize warheads materials while not revealing weapon design information.	Test and evaluation of NDA systems to characterize nuclear materials while not revealing weapon design information.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Onsite Systems (Cont'd)		Develop detection technologies to promote transparency and confidence building measures associated with warhead dismantlement and long term monitoring of nuclear materials. Support the technical requirements of bilateral and multilateral discussions and agreements.	Continue the development of technologies and concepts to support transparency and confidence building measures associated with warhead dismantlement and nuclear materials monitoring. Support on-site inspections/visits, reciprocal US and Former Soviet Union dismantlement agreements, Highly Enriched Uranium (HEU) purchase agreements, and other bilateral and multilateral inspections.
		Develop multiple sensor technology and prototype equipment for bilateral and multilateral nuclear proliferation detection applications.	Continue the development of sensors and algorithms for processing data from multisensor technology and prototype equipment which could be used for bilateral and multilateral nuclear proliferation detection applications.
		Complete the development of sensors, data analysis techniques and workstation interface for unattended monitoring.	Test and evaluate sensors and monitoring system performance. Perform technology improvements in nuclear sensor data handling and analysis.
		Demonstrations of transparent monitoring of specific nuclear components from remote locations will be conducted to support interagency policy developments.	Continue the technology demonstrations in support of the interagency policy community.
		Conduct missions with the Airborne Multisensor Pods System (AMPS) to compile unique data set to support data fusion.	Continue FY 1995 program.
		Coordinate AMPS data acquisition with the interagency to provide needed information and support to users for data fusion.	Continue FY 1995 program.
		Test and evaluate each subsystem in the AMPS third pod.	Complete the certfication of the AMPS third pod.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Onsite Systems (Cont'd)		Develop mission plans which incorporate data acquisition and data fusion into the third pod.	Conduct the first data collections with the third pod.
		Develop advanced signal processing techniques to enhanced location and characterization of underground structures using gravity, magnetic, electromagnetic induction, and seismic techniques.	Continue FY 1995 program.
		Test and evaluate the performance of geophysical sensors packaged in rapid deployment data acquisition platforms in conjunction with intelligence community and the Department of Defense.	Develop prototype systems and sensor for the user community.
		Coordinate the underground structure technology development program with the interagency.	Continue FY 1995 program.
		Begin development of data fusion techniques for enhanced resolution capabilities for detection of underground structures.	Continue FY 1995 program.
		Develop field deployable systems to detect, locate and characterize materials used in the manufacture of weapons of mass destruction.	Develop field deployable systems to detect, locate and characterize materials used in the manufacture of weapons of mass destruction.
	$ 0	$ 40,047	$ 40,972

III. Nonproliferation and Verification Research and Development (cont'd).

Program Activity	FY 1994	FY 1995	FY 1996
Regional Monitoring Systems		Seismic monitoring research will begin to develop regional characterization methodologies for two areas of interest. Improved empirical location (epicenter and depth) techniques and regional discriminants will be developed. Physical basis (computer modeling) for regional propagation, event location, and discrimination will be developed. Field studies will be performed to verify the research.	Seismic monitoring research will complete the development of regional characterization methodologies for two areas of interest. Work will continue on improved empirical location (epicenter and depth) techniques and regional discriminants. The physical basis for regional propagation, event location, and discrimination will continue. Field studies to verify research will continue.
		Ocean monitoring research will examine gaps in current hydroacoustic coverage for fully coupled and evasive tests; specify assets necessary to complete hydroacoustic coverage; and develop detection, location, and discrimination algorithms to automate ocean monitoring.	Ocean monitoring will complete the examination of gaps in current hydroacoustic coverage; begin to prototype assets necessary to complete hydroacoustic coverage; and continue to develop detection, location, and discrimination algorithms to automate ocean monitoring.
		On-site inspection research will refine the understanding of the phenomenology including seismic aftershocks, local earthquake/explosion discrimination, and seepage rates of radioactive gases. Development of methods for detecting disturbed ground from overhead imagery will begin. Appropriate instrumentation for on-site inspections will be determined.	On-site inspection research will continue to refine the understanding of the phenomenology including seismic aftershocks, local earthquake/explosion discrimination, and seepage rates of radioactive gases. Development of methods for detecting disturbed ground from overhead imagery will continue. Determination of appropriate instrumentation for on-site inspections will continue.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Regional Monitoring Systems (Cont'd)		Automated data processing research will begin to develop neural networks to improve event detection. New techniques for event association and discrimination will be developed. Work on improved computer/human interactions, system surety, and embedded metrics for performance evaluation will begin. A framework for multisource data (seismic, radionuclide, hydroacoustic, etc.) integration will be developed.	Automated data processing research will continue to develop neural networks to improve event detection. Techniques for event association and discrimination will continue. Work will continue on improved computer/human interactions, system surety, and embedded metrics for performance evaluation. Development of a framework for multisource data (seismeic, radionuclide, hydroacoustic, etc.) integration will continue.
		Private sector contracts will provide the private sector research necessary to support seismic monitoring research, ocean monitoring research, and automated data processing research.	Continue FY 1995 program.
		Continue testing and evaluation of advanced effluent sampling and real time analysis systems and techniques in support of a CTBT. Laboratory prototypes will be fabricated and initial testing will begin. Field prototypes will be fabricated in mid FY 1995.	Field prototypes for CTBT effluent monitors will be tested and optimized. Systems will be transferred to user.
		Airborne field testing of the echelle/infrared Multichannel Analyzer (IRMA) spetrometer will be completed.	Advanced features of the echelle grating spectrometer will be incorporated into a comprehensive field demonstration. Field demonstrations will be completed.
		Field tests of 210-300 GHz multispectral radiometer will begin.	Millimeter wave detector project will be completed and technology transferred to user.
		Developments in accelerator mass spectrometry for ultratrace analysis will continue. Efficient sample handling and analysis systems for high-throughput work will be implemented.	No Activity

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Regional Monitoring Systems (Cont'd)		Advanced analytical techniques will be applied to highlight unique signature compounds at trace levels in complex sample matrices. An integrated approach to collection and measurement techniques will be defined.	Continue development of advanced analytical techniques for analysis of proliferation signatures of interest. Key focus areas include development of efficient and selective sorbents, testing production of radiolysis products from simulated nuclear proliferation processes, and developing methods to efficiently extract species of interest from soil samples for further analysis.
		Analysis of real world samples will be done using a secondary ion mass spectrometer.	Development of a secondary ion mass spectrometer unit will be complete. Technology will be transferred to the user.
		Methods to alter electrophoretic mobilities of particles and an overall method for separating particles will be devised, tested, and evaluated.	No activity.
		Collection parameters and operation methods for the electrostatic precipitator will be established. Analysis of collected particles will be done.	Development of electrostatic precipitator particle collector will be complete. Technology will be transferred to the user.
		Ion microscopic analysis of standards for trace elements will be conducted.	No activity.
		Time of Flight (TOF) spectrometer will be redesigned and tested. Ruggedization tests will be conducted.	Development of time-of-flight spectrometer will be complete. Unit will be ready for aircraft flight or other test platform. Technology will be transferred to the user.
		System designs for the automated nuclear track characterization system will be finalized and a prototype system will be fabricated. Control algorithms and operator interfaces will be optimized.	The prototype system will be tested and evaluated. System will be modified and enhanced according to results of system testing. Final system will be transferred to user.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Regional Monitoring Systems (Cont'd)		Bubble chamber spectroscopy techniques will be tested using target species of interest. Test results will be evaluated and a decision for further development will be made.	No activity.
		Laser-based detectors for capillary electrophoresis will be developed. Methods to detect radioactive products will be developed. Analysis of real samples will begin.	Complete optimization of diode laser-based detectors for capillary electrophoresis. Develop methods to detect actinide species.
		Detection crystals for an acousto-optical tunable filter instrument will be optimized to meet requirements. Laboratory tests will be performed.	Fabricate and field test prototype acousto-optical tunable filter system.
		A fieldable prototype of an ultrasensitive, selective air monitor for organic species will be fabricated and tested.	No activity.
		A microminiaturized liquid chromatography and capillary electrophoresis instrument for high-speed separations and analysis of small liquid samples will be developed. Efforts will focus on detection technologies and external sample loading.	Complete development of a prototype microminiaturized liquid capillary electrophoresis instrument.
		Development of photon burst mass spectrometry will be completed. Technology will be transferred to user.	No activity.
	$ 0	$ 38,640	$ 42,297

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Remote Sensing Systems		Fabrication of Global Positioning System (GPS) Block IIR flight systems will continue at the rate of four per year.	Provide Global Positioning System (GPS) Block IIR satellite equipment for detecting and characterizing radiations which would emanate from a nuclear explosion. Treaty verification, proliferation detection, and military goals will be addressed. Fabrication will continue at the rate of four flight systems per year.
		Defense Support Program (DSP) payload fabrication activities will continue. Integration activities will continue to be supported.	Provide Defense Support Program (DSP) satellite equipment for detecting and characterizing radiations which would emanate from a nuclear explosion. This supports treaty verification, proliferation detection and military goals.
		Analytical activities will continue on the satellite radiation environment and spacecraft anomalies. Operational support to deployed systems will continue; launch support for spacecraft carrying DOE payloads will continue.	Provide technical support for operational users of the DOE sensors which detect and provide information on nuclear detonations in the atmosphere and in space. The work involves testing, data analysis, detector characterizations, and interpretation of sensor outputs in light of mission requirements.
		Selected development of radiation hardened microelectronics will continue. Development of new packaging technologies for Very Large Scale Integration (VLSI) electronics will continue.	Develop and evaluate high performance and special function processors, new sensor array concepts, automated designing techniques, radiation hardened micro-electronic components, and advanced packaging technologies.
		Continue development of advanced sensor concepts and improved detectors.	Develop an advanced sensors technology base which will lead to improvements in current satellite systems and to entirely new detector concepts for future treaty verification and proliferation detection needs.

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III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Remote Sensing Systems (Cont'd)		Development of technologies to support small dedicated satellites and development of power and data processing subsystems will continue.	Maintain facilities, procedures, and documentation to provide capabilities for automated design definitions, fabrication oversight, environmental testing, component traceability, and as needed, failure analysis and flight-quality repair of DOE instrumentation systems for satellite applications.
		A small satellite flight experiment to test candidate proliferation detection thermal imaging technologies will be designed.	Design and assemble the Multispectral Thermal Imager (MTI) satellite. This space-flight experiment will develop and demonstrate advanced techniques for passively observing and analyzing thermal, and gaseous emissions and for performing multispectral scene characterization.
		Fast On-orbit Recording of Transient Events (FORTE) fabrication and integration will be supported.	Launch, operate, and analyze data from the Fast On-Orbit Recording of Transient Events (FORTE) small satellite to develop and demonstrate next generation techniques for detecting and characterizing the electromagnetic pulses from nuclear explosions.
		Develop advanced technologies for pre-test detection of weapons of mass destruction proliferation activities using sensors that could be space-based.	Continue to develop advanced technologies for pre-test detection of weapons of mass destruction proliferation activities using sensors that could be space-based.
	$ 0	$ 82,540	$ 81,424
Advanced Systems		Development activities at Radar Algorithm Development Laboratory (RADL) will be expanded in scope with additional computing facilities and capabilities.	Developmemt activities at Radar Algorithm Development Laboratory (RADL) will be expanded in scope with additional computing facilities and capabilities. Also RADL will begin to use unclassified AMPS data for dual use exploitation.

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III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Systems (Cont'd)		Finalize the compilation of effluent signatures with technologies under development.	Effluent signatures database will be updated with new information as it becomes available.
		Laser development and standoff sensor development for remote optical characterization of multiple chemical effluents from proliferation activites will continue.	Laser development and standoff sensor development for remote optical characterization of multiple chemical effluents from proliferation activities will continue. Ground-based field tests will be conducted. Preparations for elevated platform field tests will begin.
		Measurement of optical signatures will continue including collaboration with Russian scientists.	Optical signatures database will be updated. Collaboration with Russian scientists will continue.
		An ultraviolet fluorescence system will be built. Ground-based field tests will be conducted.	Ultraviolet fluorescence system will be integrated with an ultraviolet differential absorbtion system and ground field test conducted.
		Infrared laser beam pointing and signal collection system will be tested over various distances. Ground-based prototype Raman system will be completed and field tested.	Infrared laser beam pointing signal collection system will be tested over various distances. The ultraviolet Raman system will be tested in the field at various distances.
		Ground-based field testing of all laser remote sensing systems will be conducted at the Nevada Test Site.	Ground-based field testing of all laser remote sensing systems will continue at the Nevada Test Site.
		Exploratory research will continue work in new and novel technologies to meet proliferation detection needs.	Exploratory research will be further expanded, to include proposal selection by users.
		Multisensor Systems Research will continue development of fusion and extraction techniques for test and imagery data in order to improve the qualtity of information and reduce the quantity of irrelevant data for human analysis.	Multisensor Systems Research will continue to explore various methods of data fusion to exploit the potential synergism in multisensor data collection.

III. Nonproliferation and Verification Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Systems (Cont'd)	$ 0	$ 49,310	$ 45,949
Program Direction	Supports salaries, benefits, and travel for 10 FTEs at Headquarters. Also includes contractual services and supplies to support Headquarters office.	Supports salaries, benefits, and travel for 10 FTEs at Headquarters. Also includes contractual services and supplies to support Headquarters office.	Supports salaries, benefits, and travel for 10 FTEs at Headquarters. Also includes contractual services and supplies to support Headquarters office.
	$ 1,000	$ 2,000	$ 2,000
Capital Equipment	Equipment funding required to meet systems fabrication, technology research and development, high priority analytical needs, and Headquarters secure communications and classified information control requirements.	Equipment funding required to meet systems fabrication, technology research and development, high priority analytical needs, and Headquarters secure communications and classified information control requirements.	Equipment funding required to meet systems fabrication, technology research and development, high priority analytical needs, and Headquarters secure communications and classified information control requirements.
	$ 13,500	$ 13,500	$ 13,500
Construction	Construction ongoing.	Construction completed.	No activity.
	$ 8,515	$ 0	$ 0
Use of Prior Year Balances	-$ 2,600	-$ 3,547	$ 0
Nonproliferation and Verification Research and Development	$ 229,134	$ 222,490	$ 226,142

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

VERIFICATION AND CONTROL TECHNOLOGY

I. Preface: Arms Control and Nonproliferation

The Office of Arms Control and Nonproliferation accomplishes its goal of reducing the threat of proliferation by matrixing the activities of its four divisions (Analytical Support, Nonproliferation Policy, Export Control Operations, and International Safeguards) across ten program activity areas in order to implement its five major program priorities: Securing nuclear materials and expertise in the former Soviet Union (FSU); Limiting weapon-useable fissile materials; Establishing transparent and irreversible nuclear reduction; Strengthening the nuclear nonproliferation regime; and Controlling nuclear exports. The ten program activities that are described below are: Analytical support; Nuclear Nonproliferation Policy; Reduced Enrichment for Research and Test Reactors (RERTR); International Safeguards; Export Control Operations; Materials Protection, Control and Accounting; Treaties and Agreements; International Security; Program Direction; and Capital Equipment.

The Analytical Support program provides direct technical and analytical support for negotiation and implementation of arms control and nonproliferation treaties, agreements and initiatives. The FY 1996 program will focus on providing analytical support for the following priority activities: controlling weapon usable nuclear materials and reducing global fissile material stocks through monitoring of the shut down of Russian plutonium production; supporting regionally-based arms control and nonproliferation initiatives; developing a regime to ensure that weapons no longer needed for deterrent purposes are dismantled and to ensure that excess materials from them are no longer used for nuclear weapons; and supporting negotiation of a global ban on production of fissile materials for weapons use. The program will continue to provide support and assistance aimed at reducing the potential for theft or diversion of Russian weapons and cooperative exchanges to reduce the possibility for accidents involving Russian weapons. Support will be intensified for completing and/or implementing the Comprehensive Test Ban Treaty (CTBT) and for further possible reductions in U.S. and Russian nuclear weapons stockpiles. The program will also continue to invest in advance analysis of future arms control issues and opportunities. Analytical support to U.S. objectives on chemical and biological weapons and missiles will continue at a maintenance level.

The Nonproliferation Policy program carries out DOE's responsibilities in implementation of U.S. nonproliferation policy including: denuclearization of the Korean Peninsula; support for technical assistance work of the IAEA; negotiation of international agreements for cooperation in the peaceful uses of nuclear energy; and review and approval of "subsequent arrangements" under the Nuclear Non-Proliferation Act and Atomic Energy Act. In addition, this area is responsible for coordinating DOE involvement in regional arms control and nonproliferation activities including the continued development and utilization of the Cooperative Monitoring Center, new international safety initiatives undertaken by the IAEA, DOE support to the Treaty on Nonproliferation of Nuclear Weapons (NPT), and management of the Reduced Enrichment Research and Test Reactor (RERTR) Program. Substantially increasing policy development and support activities will assist in more effective and efficient policy management and integration and will require increased technical support from DOE laboratories for nonproliferation studies and activities such as negotiation of the Euratom Agreement for Cooperation. Additional activities for the FY 1996 include establishing international cooperation and support for means of not encouraging the civil use of plutonium as directed in Presidential policy.

The RERTR Program was established in 1978 in order to contribute to U.S. nuclear nonproliferation policy by minimizing access by non-nuclear weapons states (especially those of proliferation concern) to highly enriched uranium (HEU), thereby reducing the risk of diversion to nonpeaceful purposes or theft by terrorist or other subnational groups, and by reducing the demand for HEU for civil uses, which might be used as a rationale for construction or operation by non-nuclear weapon states of enrichment facilities to produce HEU. The program has developed, tested and demonstrated high density low enriched uranium (LEU) fuels that can be used in all but three high-performance foreign research reactors in Europe, has helped to bring about the conversion of a number of foreign reactors from the use of U.S. origin HEU or HEU from other Western countries, and has made possible substantial reduction in the level of U.S. exports of HEU. It has obtained substantial participation and cooperation from other foreign countries in the implementation of the program, and has developed unsurpassed expertise and analytical capabilities which can continue to be utilized to persuade and assist foreign and domestic research reactor owners to convert to the use of

presently qualified LEU fuels. It can also help them in performing the necessary technical analyses for obtaining the necessary licensing approvals. The program will continue to evaluate the technical and economic justification for exports of U.S. HEU to foreign countries in accordance with the Atomic Energy Act and other applicable legislation. These activities will thus continue to contribute substantially to the achievement of U.S. nuclear nonproliferation goals and objectives. Major new areas include the establishment of a cooperative program with Russia to support the conversion of Russian-designed and supplied reactors, and the establishment of cooperation with China. Inclusion of Russian and China would help achieve a global commitment to the RERTR program. Additional program objectives include: eliminating the need for using weapons-usable uranium in medical isotope production by developing LEU technology that would provide the same benefits, but without the risk of nuclear proliferation; identifying the amount and location of all U.S. origin HEU inventories abroad on a facility by facility basis; estimating the cost of shipping spent HEU from selected sites abroad to the U.S., UK, or France for recovery by exploiting available LEU fuels technology developed under the U.S. RERTR program since 1978.

The International Safeguards program seeks to reduce the risk of nuclear weapons proliferation by improving global nuclear material controls and increasing the effectiveness of independent verification regimes such as the IAEA and Euratom. The program provides technical leadership to formulate and implement U.S. nonproliferation and national security policy for global control of nuclear materials. The program is organized into three business priorities: (1) secure Former Soviet Union (FSU) nuclear materials by improving FSU nuclear material controls, accountability and physical security on a government-to-government and laboratory-to-laboratory level; (2) improving the effectiveness of the IAEA Safeguards and reducing IAEA costs and; (3) promoting international cooperation to ensure adherence to U.S. nuclear nonproliferation objectives.

The mission of the Department of Energy's (DOE) Export Control program is to advance U.S. nonproliferation export control objectives by developing and implementing policies, regulations, and procedures to halt the spread of weapons of mass destruction; to control the export of nuclear-related equipment, materials, and technologies as mandated by law, and in accordance with national security objectives; and to provide unique technical expertise and training for the U.S. and international nonproliferation communities. The program will fulfill its mission through the completion of five objectives: 1)implementation of statutory licensing requirements and reduce/eliminate unilateral export controls; 2) strengthen multilateral supplier initiatives; 3) provide export assistance and laboratory-to-laboratory cooperation to the newly independent states; 4) foster transparency through automated information sharing and analysis of databases and; 5) strengthen technology security and technology transfer guidance.

Recognizing the urgent need for effective nuclear material security systems and establishment of effective export controls, specifically in the Russian Federation, the Department of Energy has initiated a program of cooperation in these fields between DOE national laboratories and Russian nuclear laboratories. This laboratory-to-laboratory Material Control, Protection, and Accounting (MPC&A) program, which includes export controls, is designed to complement cooperation under the government-to-government agreements. The lab-to-lab program is focused on key nuclear institutions and facilities which possess quantities of "direct-use" nuclear materials and key Russian Government Ministries responsible for managing these facilities. Additional support will be provided to support the related government-to-government activities previously funded by Nunn-Lugar in MPC&A because the initiative relies heavily on the assets of DOE. DOE will also complement Nuclear Regulatory Commission (NRC) cooperation with GAN, the Russian regulatory agency, by assisting in the development of a tracking system similar to DOE's Nuclear Materials Management and Safeguards System (NMMSS) and on a variety of other issues, most importantly in MPC&A.

The Treaties and Agreements program supports the implementation of bilateral, multilateral, administration and congressional arms control and nonproliferation initiatives, agreements and treaties. Specifically, it provides for unexpected, unbudgeted preparation to meet new transparency or verification requirements consistent with U.S. national security and without compromising proliferation sensitive information. Recent examples include the U.S. voluntary offer for IAEA inspection of excess fissile material at the Oak Ridge Y-12 plant, U.S.-Russian mutual reciprocal inspections of plutonium removed from nuclear weapons, the U.S.-Russian plutonium production reactor shutdown agreement, and the successful removal of Highly Enriched Uranium (HEU) from Kazakhstan.

The International Security program is funded within the budget of the Office of Arms Control and Nonproliferation specifically for international security commitments of the Administration in the Newly Independent States of the former Soviet Union or the Democratic Peoples Republic of Korea. While detailed use of these funds can not be determined at this time, planned activities include: storage pool treatment and stabilization, and canning and storage for further disposition of the spent fuel from the North Korean 5MW nuclear reactor; and support for the Industrial Partnering Program (IPP).

I. Arms Control and Nonproliferation (Cont'd)

The Program Direction activity provides for salaries and benefits for the Federal workforce, travel funds, incentive awards, and contractual services and supplies.

The Office of Arms Control and Nonproliferation requires capital equipment at the National laboratories to carry out its mission of investigating techniques and approaches to enhance global nuclear material and export controls. Included in this mission is the requirement to transfer and implement technologies which improve the effectiveness of the International Safeguards and Export Control programs and the verification and regional arms control activities of the Nonproliferation Policy program. This requires increasingly sophisticated and technically complex technology evaluation and testing equipment. Most of the requested capital equipment funding will support the Material Protection, Control, and Accounting program including purchase of the equipment in the operating facilities in Russia. Capital equipment is also needed to conduct high density LEU fuel development at Argonne to support the RERTR program. These needs are reflected in this request for capital equipment. Capital equipment funds are used to upgrade existing laboratory equipment, procure and enhance computer software/hardware systems, and update and modernize accessories to existing laboratory equipment in support of technology evaluation and configuration.

II. A. Summary Table: Arms Control and Nonproliferation

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Analytical Support	$ 17,815	$ 18,098	$ 18,098	$ 0
Nuclear Nonproliferation Policy	5,854	5,863	5,863	0
Reduced Enrichment Research and Test Reactor (RERTR) Program	1,925	1,784	3,484	1,700
International Safeguards	21,351	21,229	21,229	0
Export Control Operations	16,297	16,077	16,077	0
Materials Protection, Control, and Accounting	0	0	47,000	47,000
Treaties and Agreements	14,065	8,075	6,640	-1,435
International Security	0	0	15,000	15,000
Program Direction	3,952	5,000	5,000	0
Capital Equipment	373	673	23,973	23,300
Use of Prior Year Balances	-1,600	-2,414	0	2,414
Total, Arms Control and Nonproliferation	$ 80,032	$ 74,385	$ 162,364	$ 87,979

II. B. Laboratory and Facility Funding Table: Arms Control and Nonproliferation

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 4,195	$ 3,865	$ 5,460	$ 1,595
Brookhaven National Lab	1,400	1,406	6,021	4,615
Idaho National Engineering Lab	100	101	111	10
Idaho Operations Office	80	80	0	-80
Lawrence Livermore National Lab	17,252	16,150	22,759	6,609
Los Alamos National Laboratory	17,747	17,391	27,274	9,883
Mound Plant	100	100	0	-100
Nevada Operations Office	9,876	700	250	-450
New Brunswick Lab	0	0	135	135
Oak Ridge National Lab	4,593	4,717	8,847	4,130
Office of Scientific & Technical Information	0	50	50	0
Pacific Northwest Lab	4,580	4,355	9,947	5,592
Pantex Plant	60	260	260	0
Sandia National Laboratories	8,303	11,854	20,123	8,269
Savannah River Ecology Lab	60	0	0	0
Savannah River Operations Office	2,091	243	300	57
Washington Headquarters	11,190	15,652	17,387	1,735
All Other	-1,595	-2,539	43,440	45,979
Total, Arms Control and Nonproliferation	$ 80,032	$ 74,385	$ 162,364	$ 87,979

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Arms Control and Nonproliferation			
Analytical Support	Analytical and technical support for nuclear test ban and other arms control treaty negotiating delegations to accomplish national goals. Analyze options for verification and implementation of a comprehensive test ban. Continued analyses of potential transparency at DOE sites.	Increase technical and analytical support for negotiations related to CTBT, the President's proposed SNM production cutoff; U.S.-Russian development of a bilateral Pu cutoff monitoring regime with emphasis on transparency & verification measures; and reciprocal monitoring of warhead dismantlement. Low-level support for non-nuclear Weapons of Mass Destruction (Chemical Weapons Convention, Anti-Ballistic Missile negotiations and transparency for Biological Weapons Convention.)	Support U.S. policy on limiting the production and stockpiling of weapons-usable fissile materials. Develop and evaluate scope and verification options for implementing Congressional and Administration initiatives related to a multilateral fissile material cutoff convention. Utilize Departmental resources and facilities to support development and negotiation of such a cutoff. Provide policy and technical support to U.S. interagency and negotiating delegations in support of U.S./Russian agreement on the Shutdown of Plutonium Production Reactors and the Cessation of the Use of Newly Produced Plutonium for Nuclear Weapons. Develop and evaluate monitoring provisions of the U.S./Russian agreement to purchase highly enriched uranium from nuclear weapons.
	Except for intensified CTBT negotiations, a marked shift in emphasis from traditional arms control to nonproliferation initiatives aimed at controlling the spread of fissile materials (SNM production cutoff, safeguards for fissile materials "excess" to deterrent needs) and transparency/verification measures related to the U.S. purchase of HEU from dismantled Russian weapons.	Continued DOE expert technical and policy support for CTBT negotiations. Increased analytical support for both multilateral fissile material production cutoff and intensified expert support for SNM cutoff convention initiative.	Support Administration policy of achieving a regime for reciprocal monitoring of U.S./Russian weapon dismantlement activities and ensuring that excess fissile materials are no longer used for nuclear weapons. Assist in development of policy approach to the exchange of nuclear weapons and materials stockpile data with Russia. Formulate and negotiate technical procedures for confirming stockpiles of fissile materials removed from nuclear weapons. Participate in formulation and negotiation of further measures for dismantlement transparency to include confirmation of stockpile declarations and monitoring of the dismantlement chain of custody. Develop alternative transparency

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analytical Support (Cont'd)			approaches that could reduce costs and intrusiveness of more rigorous monitoring.
	Technical & analytical support for fissile material production cutoff and control projects under the Gore-Chernomyrdin/O'Leary-Mikhailov activities to implement the President's Nuclear Initiatives. Transparency measures to support implementation of the U.S. Agreement to purchase HEU from dismantled Russian nuclear weapons. Continued support for lab-to-lab projects, ISTC/STCU, and safe, secure nuclear weapons dismantlement under CTR.	Increase technical support for policy analyses related to production reactor conversion and the proposed bilateral Pu production cutoff monitoring regime. Emphasis on development and analysis of transparency & verification measures for fissile material initiatives. Intensify preparation for on-site inspections at sensitive DOE facilities. Continued support for U.S./FSU lab-to-lab and Science & Technology Center interactions.	Stem the flow of nuclear materials and expertise from the former Soviet Union by assisting implementation of the U.S./Russian agreement for exchange of technical information for nuclear warhead safety and security. Agreed technical exchanges will include documents, workshops and large-scale symposia between the two sides. Perform both policy and, through the National Laboratories, technical evaluations of projects proposed for U.S. funding through the International Science and Technology Centers in Russia and the Science and the Science and Technology Center Ukraine (STCU).
		Conduct cross-cutting analysis and technical evaluation of transparency and verification measures supporting new arms control and nonproliferation policy initiatives, including further nuclear material control and disposition regimes, and related transparency and verification measures. Assess treaty requirements and their impact on DOE facilities. Analyze arms control and nonproliferation postures and prospects of critical weapon and threshold states (China, Korea, Pakistan, India, etc.). Conduct forward-looking analyses of arms control and nonproliferation aspects of emerging national, regional, and global security issues and policy direction (with outreach to non-governmental organization, academia, institutes, industry). Continue Departmental and interagency coordination and oversight of fledgling laboratory-to-laboratory	Provide analytical expertise for development of policy on strengthening the Nuclear Nonproliferation Treaty. Provide technically-based evaluation on scope, verification and treaty provisions as well as policy and technical representation to the U.S. Comprehensive Test Ban Treaty (CTBT) negotiating delegation in the Conference on Disarmament. Further strengthen nonproliferation norms by developing international inspection approaches that do not reveal weapon design information when applied to excess fissile material in the form of weapon components.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analytical Support (Cont'd)		interactions with the Peoples Republic of China.	
	$ 17,815	$ 18,098	$ 18,098
Nuclear Nonproliferation Policy			Development of and participation in regimes to implement the President's direction to not encourage the civil uses of plutonium and reduce plutonium and HEU stockpiles worldwide; identification, development of viable options, and management of long term alternatives for both power and research reactor spent fuel disposition; support for regional multinational fuel cycle initiatives.
	Enhanced support of recruitment of U.S. nationals for IAEA Secretariat, cost-free experts, and technical programs.	Continue enhanced support of recruitment of U.S. nationals for IAEA Secretariat, cost-free experts, and technical programs.	Provided support of recruitment of U.S. nationals for IAEA Secretariat, cost-free experts, and technical programs.
	Provided support for IAEA technical programs for non-nuclear weapon state. Continue comprehensive examination of U.S. priorities for new directions for increasing the effectiveness of the IAEA, in the peaceful uses sector such as alternatives to reprocessing, research reactor fuel disposition, nuclear safety, and regional arms control activities. Provision of gifts of special nuclear material to the IAEA as provided in the Atomic Energy Act of 1954, as amended.	Support for IAEA technical programs for non-nuclear weapon states. Continue comprehensive examination of U.S. priorities for new directions for increasing the effectiveness of the IAEA, in the peaceful uses sector such as alternatives to reprocessing, research reactor fuel disposition, nuclear safety, and regional arms control activities. Provision of gifts of special nuclear material to the IAEA as provided in the Atomic Energy Act of 1954, as amended.	Intensify support for IAEA special inspection efforts and technical programs for non-nuclear weapons states. Implement new priorities for supporting the IAEA, in the peaceful uses sector such as nuclear safety, and regional arms control activities. Provision of gifts of special nuclear material to the IAEA as provided in the Atomic Energy Act of 1954, as amended.
	Continued participation in General Conference, Board of Governors meetings, implementation of Nuclear Non-proliferation Treaty (NPT).	Continue participation in General Conference, Board of Governors meetings, implementation of Nuclear Non-proliferation Treaty (NPT).	Continue participation in General Conference, Board of Governors meetings, implementation of Nuclear Non-Proliferation Treaty (NPT).

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Nonproliferation Policy (Cont'd)	Continued support for negotiation of Euratom Agreement for Cooperation. Continued support for implementation of administrative arrangements pursuant to agreements for cooperation. Supported Department of State in negotiating new agreements for cooperation as required by the IAEA.	Continue support for negotiation of Euratom Agreement for Cooperation. Continue support for implementation of administrative arrangements pursuant to agreements for cooperation. Support for Department of State in negotiating new agreements for cooperation as required by the IAEA. Continue implementation of administrative arrangements.	Continue support for Euratom negotiations if agreement not signed in FY 1995.
	Supported Department of State in negotiation of new agreements for cooperation with FSU States and China. Continued implementation of administrative arrangements.	Support Department of State in negotiation of new agreements for cooperation with FSU States and China. Continue implementation of administrative arrangements.	Support Department of State in negotiation of new agreements for cooperation with FSU States and China. Continue implementation of administrative arrangements.
	Provided support for other high priority regional activities as required by international developments. Developed regional conflict management approval and set up base program in cooperative verification measures/transparency technology.	Verification technology demonstration for Middle East. Support DOE participation in Middle East Arms Control talks. Support training and technology for Korean peninsula denuclearization process. Support to East Asian security and arms control process. Support to South Asia confidence building. Support RERTR Program regional efforts in FSU and China. Support to process of engagement of Argentina and Brazil on nuclear nonproliferation.	Continue FY 1995 activities and expand base program in cooperative verification and arms control training and arms control agreements.
	Continued to support senior DOE management in development of DOE positions in interagency deliberations concerning nonproliferation policy.	In addition, increase DOE participation in bilateral and multilateral negotiations and discussions in nonproliferation matters including Agreements for Cooperation in the Peaceful Uses/Nuclear Energy and Subsequent Arrangements as mandated by the Atomic Energy Act of 1954 as amended. Conduct studies and outreach activities in support of regional arms control. Identify, analyze, and propose actions to reduce regional sources of tension which contribute to motivations for proliferation. Support	Continue FY 1995 program activities.

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III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Nonproliferation Policy (Cont'd)		RERTR Program policy development activities with Russia, China, other possible FSU or FSU-client countries. Analyses of alternative options for limitations on or elimination of international traffic in fissile materials, including alternative fuelcycles, and management and minimization of excess civil stockpiles of plutonium.	
	$ 5,854	$ 5,863	$ 5,863
Reduced Enrichment Research and Test Reactor (RERTR) Program	Continued RERTR base program to support conversion of reactors for which fuel has been developed. Worked with South Africa and Russia to initiate cooperative programs. Established contact with China.	Begin implementation of RERTR program with Russia, including laboratory-to-laboratory assistance. Continue LEU conversion assistance to Western research reactors. Continue cooperation in development of LEU targets for medical isotope production. Continue to explore possible RERTR cooperation with China and South Africa. Begin development of advanced LEU fuels for use in high-flux research reactors which we are currently unable to use qualified and licensed LEU fuel.	Continue implementation of RERTR program with Russia, including laboratory-to-laboratory assistance. Continue LEU conversion assistance to Western research reactors. Continue cooperation in development of LEU targets for medical isotope production. Continue to explore possible RERTR cooperation with China and South Africa. Increase in funding is for the continued development of high density (HD) fuel, and for molybdenum-99 production using LEU.
	$ 1,925	$ 1,784	$ 3,484
International Safeguards	Investigated and developed enhanced safeguards approaches for advanced nuclear fuel cycle facilities as well as approaches for special inspections, long-term monitoring, and environmental sampling.	Provide technical support to IAEA and DOE facilities to implement IAEA safeguards on excess U.S. material. Complete preparations for IAEA safeguards at Rocky Flats and additional DOE facilities identified. Support on-going IAEA inspections at Y-12 and Hanford.	Provide technical support to IAEA and DOE facilities to implement IAEA safeguards on excess U.S. material. Complete preparations for IAEA safeguards at additional DOE facilities as identified. Support on-going IAEA inspections at Y-12, Hanford, and Rocky Flats.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Safeguards (Cont'd)	Provided technical support to assist the IAEA implement environmental monitoring as a new safeguards technique. Completed field trials sample analysis. Provided support to complete construction of IAEA Clean room.	Continued to provide technical support to assist the IAEA implement environmental monitoring as a new safeguards technique; complete field trials sample analysis; and provide support to complete construction of IAEA Clean room.	Provide technical support to assist the IAEA perform environmental sample analysis.
	Investigated confidence building measures needed to establish safeguards regimes, in the Middle East, Korean Peninsula, and South Asia.	Investigate remote monitoring as a new safeguards technique. Continue field trials in Australia, Sweden, and Japan. Begin field trials in Russia, Argentina, Germany, and Italy. Investigate software to simplify data analysis and presentation.	Continue field trials, identify and make enhancements based on trial recommendations. Begin technology transfer to the IAEA for routine use.
	Investigated and developed approaches for application of safeguards to Gaseous Diffusion Enrichment Plants in Brazil; Aerodynamic Enrichment Plants in South Africa; and the AVLIS Plant.	Provide support to IAEA to improve their information management capabilities. Deliver field portable tools, environmental sample visualization tools, and predefine text search and linkage tools. Provide technical advice, training, and additional computing tools.	Continue support to improve IAEA data management capabilities. Deliver upgraded computer tools which provide the IAEA with enhanced capabilities. Including sophisticated proliferation path modeling tools.
	Investigated near-real-time accountability concepts. Investigated and developed advanced safeguards concepts for spent fuels. Assessed safeguards for the Civilian Radioactive Waste Management system. Supported initiatives to improve foreign physical protection.	Present International Training Course (ITC) on Physical Protection in April. Present ITC on State system in May.	Begin preparation for next ITC which are scheduled for spring of FY 1997.
	Assumed responsibility for international portion of International Nuclear Analysis (INA) Program operational. Domestic material tracking transferred to INA based on successful completion of evaluation compared to Nuclear Material Management and Safeguards system.	Continued to assume responsibility for international portion of International Nuclear Analysis (INA) Program operational. Domestic material tracking transfer to INA based on successful completion of evaluation compared to Nuclear Material Management and Safeguards system.	Maintain International Nuclear Analysis (INA) system to track international and domestic nuclear material inventories.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Safeguards (Cont'd)	Provided assistance (equipment and training) to help IAEA and UNSCOM fulfill their statutory obligations. In particular, inspections in Iraq and North Korea.	Continued to provide assistance (equipment and training) to help IAEA and UNSCOM fulfill their statutory obligations. In particular, inspections in Iraq and North Korea.	Maintain support for IAEA and UNSCOM inspections in Iraq and North Korea.
	Provided technical assistance to South Korea, as needed, to support Korean safeguards in regime, and to Argentina and Brazil in support of their bilateral safeguards regime.	Continued to provide technical assistance to South Korea, as needed, to support Korean safeguards in regime, and to Argentina and Brazil in support of their bilateral safeguards regime.	Maintain technical assistance to South Korea, as needed, to support a Korean safeguards regime, and to Argentina and Brazil in support of their bilateral safeguards regime.
	Developed, demonstrated and deployed advanced safeguards equipment for use by the IAEA, regional, and bilateral safeguards regimes at nuclear fuel cycle facilities worldwide.	Conducted technical exchanges and development cooperation with EURATOM, Japan, United Kingdom, France, Germany, China, and Australia in the areas of safeguards for large scale reprocessing plants, MOX fuel fabrication, geological disposal of spent fuel and development of remote unattended systems, integrated systems, and other enhancements to safeguards and physical protection.	Fulfill contractual obligations by conducting technical cooperation on development of advanced safeguards approaches and technologies.
	Developed advanced containment and surveillance systems and advanced nuclear material verification and assay systems.	Work with national level organizations to develop model systems of MPC&A at selected facilities within Russia (Elektrostal; Mayak; and expanded sites TBD), Ukraine (South Ukraine Power Plant; Keiv Research Institute), and Kazakhstan (Ulba Fuel Fabrication Facility and Semipalatinsk). Provide training for national authorities and facility personnel who develop, operate, and maintain MPC&A systems. Support the development of Russian national MPC&A training center.	Continue FY 1995 program activities.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Safeguards (Cont'd)	Implemented lab-to-lab program to rapidly implement upgraded MPC&A systems, provided technical assistance and training, and funded Russian manpower costs to carry out the terms of the contracts. Implemented upgraded MPC&A systems at Kurchatov and Obninsk. Developed MPC&A demonstration system at Arzamas-16. Negotiated the terms of cooperation with Chelyabinsk-70. Completed an integrated Action Plan for implementation of the lab-to-lab program.	Continued to implement lab-to-lab program to rapidly implement upgraded MPC&A systems, provide technical assistance and training, and fund Russian manpower costs to carry out the terms of the contracts. Continued to implement upgraded MPC&A systems at Kurchatov and Obninsk. Continued to develop MPC&A demonstration system at Arzamas-16. Continued to negotiate the terms of cooperation with Chelyabinsk-70. Completed an integrated Action Plan for implementation of the lab-to-lab program.	Continue FY 1995 activities.
	Developed advanced PC-based hand-held inspections aids for on-site inspections. Investigated satellite transmission of data to centralized office. Investigated development of U.S. Government rapid response nonproliferation inspection team.	Negotiate technical collaborations in ISTC projects which develop safeguards systems. Support the development of material controls for Russian fissile storage facility construction project. Support development of transparency measures in the purchase of Russian HEU. Support development of an effective monitoring regime for the shutdown of the plutonium reactors at Tomsk and Krasnoyarsk in Russia.	Continue FY 1995 activities.
	Worked with national authorities in Belarus to negotiate an agreement for cooperation in the area of MPC&A.	Continued to work with national authorities in Belarus to negotiate an agreement for cooperation in the area of MPC&A.	Continue FY 1995 activities.
	Worked with national authorities in Latvia, Lithuania, and other countries as required and the IAEA to develop and implement improved MPC&A systems.	Continued to work with national authorities in Latvia, Lithuania, and other countries as required and the IAEA to develop and implement improved MPC&A systems. Cooperation with FSU and MPC&A activities in FY 1996 will appear in the MPC&A line of the budget.	Continue FY 1995 activities.

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III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Safeguards (Cont'd)	Completed preparation for International Training Courses (ITC) on physical protection and began preparation for the next course scheduled for early FY 1995. Began preparation for the next ITC on State System of Accounting for and Control of Nuclear Material for the next course scheduled for early FY 1995. Conducted technical exchanges and development cooperation with EURATOM, Japan, United Kingdom, France, Germany, China, and Australia in the areas of safeguards for large scale reprocessing plants, MOX fuel fabrication, geological disposal of spent fuel and development of remote unattended systems, integrated systems, and other enhancements to safeguards and physical protection.		
	$ 21,351	$ 21,229	$ 21,229
Export Control Operations	Continued implementing nonproliferation export control training courses in former Soviet Republics and Central/Eastern European states.	Continue implementation of nonproliferation export control training courses in former Soviet Republics and Central/Eastern European states and complementing Safe, Secure Dismantlement (SSD) activities.	Continue implementation of Nunn-Lugar/DOE-lead bilateral nuclear nonproliferation export control assistance to the Former Soviet Union, with particular country focus on Russia, Ukraine, Belarus, and Kazakhstan.
	Continued country/regional and technical analysis with emphasis on: country specific concerns; political evolution; and technological advancement.	Perform technical analyses which would permit the evaluation of the effectiveness of various nonproliferation policy options, as well as, providing recommended courses of action.	Continue lab-to-lab cooperative agreements to engage Russian scientists in the technical license review process within their respective national export control systems. Concomitantly, engage industries in an outreach program in support of implementing a national export control system. Provide nuclear nonproliferation training to the newly independent states on international export control regimes.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Export Control Operations (Cont'd)	Continued to provide technical analysis on nuclear control lists in support of ongoing New Forum initiatives and complementary SSD activities.	Provide technical analysis on nuclear control lists in support of on-going initiatives.	Promote efforts to harmonize and coordinate activities of all multilateral export control regimes.
	Continued activities including bilateral and multilateral discussions in training and education in support of effective export controls and nonproliferation objectives.	Represent DOE in bilateral and multilateral discussions regarding the control of sensitive nuclear technology and nuclear related commodities, and in furtherance of U.S. nonproliferation objectives.	Represent DOE in bilateral and multilateral discussions regarding the control of sensitive nuclear technology and nuclear related commodities, and in furtherance of U.S. nonproliferation objectives. Provide policy and technical representation to U.S. bilateral and multilateral negotiations and activities in support of nonproliferation export controls.
	Provided technical expertise and support to nonproliferation and strategic trade negotiations for key nuclear-related commodities such as sensors/lasers, as well as, machine tools, robotics, and "flexible manufacturing" technologies.	Continue to provide technical expertise and support to nonproliferation and strategic trade negotiations for key nuclear-related commodities.	Strengthen the Nuclear Suppliers Group and NPT Exporters Committee by providing leadership and technical expertise to improve multilateral export control, guidelines and control lists, expand adherence; and promote transparency through information sharing. Assist NSG partners in addressing illegal transits/diversions by making U.S. technical expertise available. Also, complete work in Customs Officials Handbook, which would provide needed reference information on nuclear and dual-use nuclear related items. Implement within the U.S., changes of the recently completed negotiations of the NSG dual-use list.
	Continued to participate in international export control activities conducted by the NSG, Zangger Committee, COCOM, MTCR, and the Australia Group. Continued prominent role in the NSG under the expanded dual-use regime, and continue upgrading control lists and guidelines.	Represent DOE in international export control activities conducted by the Nuclear Suppliers Group (NSG), Zangger Committee, COCOM, MTCR, and the Australia Group. Continue to play the key USG role in the NSG under the expanded dual-use guidelines. Continue upgrading control lists and guidelines.	

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Export Control Operations (Cont'd)	Continued development of dual-use trade assessments and common standards of licensing among international regimes.	Continue development of dual-use trade assessments and common standards of licensing among international regimes.	Continue development of the dual-use trade assessments and common standards of licensing among international regimes.
	Continued review, evaluation, and licensing recommendations on nuclear and nuclear-related exports licensed or authorized by DOE, NRC, and the Departments of Commerce and State.	Review, evaluate, and make recommendations on nuclear and nuclear-related exports licensed or authorized by DOE, NRC, and the Departments of Commerce and State. Review existing unilateral controls regarding computer software which could aid in the development of nuclear devices or unsafeguarded nuclear material, and make recommendations to the Nuclear Suppliers Group for the implementation of multilateral controls.	Review and coordinate the licensing activities authorized by DOE, NRC, and DOS with the transfer by U.S. suppliers of special nuclear materials, nuclear-related equipment and technology. Reassess DOE export licensing review policies and procedures based on the President's nonproliferation policies, country of destination, and commodity. Streamline U.S., licensing practices by identifying unilateral controls for either transformation into multilateral agreements or elimination. Review existing unilateral controls regarding computer software which could aid in the development of nuclear devices or unsafeguarded nuclear material, and make recommendations to the Nuclear Suppliers Group for the implementation of multilateral controls.
	Continued to provide program and systems support for Sensitive Countries Information Logging System (SCILS). Developed and implemented data entry capability including reviewing the feasibility of transferring SCILS data files to the Proliferation Information Network System (PINS) and other databases.	Continue to provide program and systems support for Sensitive Country Information Logging System (SCILS).	Expand the use of SCILS to other DOE sites.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Export Control Operations (Cont'd)	Continued to provide security reviews of DOE visits and assignments, foreign travel requests, technical exchanges, and exports of DOE-controlled technology.	Provide security reviews of DOE visits and assignments procedures, foreign travel requests, technical exchanges, and export of DOE-controlled technology. Review update and strengthen technology security guidance in response to the Secretary's 1994 directive concerning DOE surplus material disposition. Assist field offices and national laboratories in implementation of export control guidelines by making technical expertise available. Develop reference and training tools which directly provide guidance on U.S. export control responsibilities in relation to the disposition of materials, equipment, and information. Conduct regional training in the U.S. to ensure that all responsible DOE and appropriate contractor personnel take account of technology security requirements into issues surrounding the sale of DOE property and the release of technical information. Provide security reviews of DOE visits and assignments procedures, foreign travel requests, technical exchanges, and export of DOE-controlled technology.	Continue to assist field offices and national laboratories in implementation of export control guidelines by making technical expertise available. Develop reference and training tools which directly provide guidance on U.S. export control responsibilities in relation to the disposition of materials, equipment, and information. Conduct regional training in the U.S. to ensure that all responsible DOE and appropriate contractor personnel take account of technology security requirements into issues surrounding the sale of DOE property and the release of technical information. Provide security reviews of DOE visits and assignments procedures, foreign travel requests, technical exchanges, and export of DOE-controlled technology.
	Continued updating the Nuclear Referral List and Military Critical Technologies List, and update Nuclear Technologies Reference Book.	Continue updating the Nuclear Referral List and Military Critical Technologies List, and update Nuclear Technologies Reference Book.	Continue updating the Nuclear Referral List and Military Critical Technologies List, and update Nuclear Technologies Reference Book.
	Continued to provide policy and technical representation to U.S. bilateral/multilateral negotiations and activities in support of nonproliferation export controls.	Provide policy and technical representation to U.S. bilateral and multilateral negotiations and activities in support of nonproliferation export controls.	

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Export Control Operations (Cont'd)	Continued to review and update export control guides. Began work on a comprehensive guide to the NSG Dual-Use List. Existing lists were updated and available data from Iraqi experience was included in the analysis.	Continue to review and update export control guides. Begin work on a comprehensive guide to the NSG Dual-Use List.	Continue to review and update export control guides. Continue work on a comprehensive guide the NSG Dual-Use List.
	Continued education programs and training activities to enhance the understanding and effectiveness of USG personnel working in nonproliferation activities.	Continue nonproliferation educational programs and training activities to enhance the understanding and effectiveness of USG personnel working in the nonproliferation community.	Continue nonproliferation educational programs and training activities to enhance the understanding and effectiveness of USG personnel working in the nonproliferation community.
	Developed, demonstrated, and deployed PINS internationally to support the exchange of licensing and export information on a real-time basis among members of nonproliferation export control regime. Operated and enhanced PINS to support technical evaluation of export application cases related to the threat of nuclear nonproliferation. International regimes such as the NSG require the establishment of a mechanism to share information on a timely basis with other nations in support of nuclear nonproliferation.	Operate the Nuclear Suppliers Group Sharing System (NSS) to support the exchange of license denials and export information on a real-time basis among members of nonproliferation export control regimes. This system is being designed in response to a NSG requirement. Expand NSS to connect remaining NSG members not on-line.	Continue to operate the NSS to support the exchange of license denials and export information on a real-time basis among members of nonproliferation export control regimes. Expand NSS further to connect remaining NSG members not on-line.
	Expanded PINS to connect remaining USG agencies and DOE labs to the distributed wide-area network. The network helped identify procurement patterns by clandestine procurement networks and allowed comprehensive exchanges of proliferation data.	Operate the classified Proliferation Information Network System (PINS) as intended. This includes work stations being located in USG agencies and DOE national labs which play a role in the nonproliferation community. Complete the PINS installations/connection to remaining USG agencies and DOE labs which will be part of the national distributed wide-area network.	Continue to operate the classified PINS as intended.
	Provided additional databases on PINS, such as Visits and Assignments, Foreign Travel Management System, 810 cases, and the Sensitive Countries Information Logging System.	Provide additional databases on PINS, such as Visits and Assignments, Foreign Travel Management System, 810 cases, and the Sensitive Countries Information Logging System.	Provide additional databases on PINS, such as Visits and Assignments, Foreign Travel Management System, 810 cases, and the Sensitive Countries Information Logging System.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Export Control Operations (Cont'd)	Enhanced the suit of software tools available on PINS to support case decision making processes and to obtain, store, retrieve, and modify a large number of databases in support of USG nonproliferation policy, including the technical analysis of export applications.	Obtain, store, and modify a large number of databases for PINS, in support of USG nonproliferation policy. This would allow (1) the user an expanded amount of data from which to draw upon in the decision making process for export cases, and (2) policy maker a more complete database of the "proliferant profile." Continue to enhance the suite of software tools available on PINS.	Enhance interaction on export licensing and nonproliferation issues among all licensing agencies through the Proliferation Information Network System (PINS) by making export licensing and nonproliferation electronically available.
	Continued development and data loading of a framework which enabled users to manage the large amounts of proliferation information illustrating the various nuclear proliferation routes (i.e., plutonium, uranium, weaponization, hydrodynamic testing, and others as needed) in which a would be proliferant may engage.	Continue development and data loading of a framework which enabled users to manage the large amounts of proliferation information illustrating the various nuclear proliferation routes in which a would be proliferant might engage.	Continue development and data loading of a framework which enabled users to manage the large amounts of proliferation information illustrating the various nuclear proliferation routes in which a would be proliferant might engage.
	$ 16,297	$ 16,077	$ 16,077
Materials Protection, Control, and Accounting		FY 1995 activities contained in the International Safeguards line item.	Work with national authorities in Russia to implement upgraded MPC&A systems at additional sites as determined in FY 1995.
		FY 1995 activities contained in the International Safeguards line item.	Implement agreement with Russian regulatory agency, GAN, to include provision of training, equipment, and technical assistance.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Materials Protection, Control, and Accounting (Cont'd)		FY 1995 activities contained in the International Safeguards line item.	Continue work with the national authorities of Russia, Ukraine, and Kazakhstan to implement upgraded MPC&A systems at selected facilities, provide training, and technical assistance. Work with Russia to upgrade MPC&A systems at additional sites, which will potentially include joint work at Dmitrovgrad, Elektrostal, Mayak, Obninsk, Novosibirsk, and Podolsk. Continue work to develop and implement a Russian national MPC&A training center. Work with Ukraine to upgrade MPC&A systems at Kharkov and other identified sites. Work with Kazakhstan to upgrade MPC&A systems at Aktau and other identified sites.
		FY 1995 activities contained in the International Safeguards line item.	Continue U.S.-Russian lab-to-lab efforts which are ongoing such as the program at Chelyabinsk-70. Expand lab-to-lab program to include operating facilities as sites where upgraded MPC&A systems are implemented. Also, integrate upgraded individual MPC&A elements at Russian sites to operate as a MPC&A system. Work to diffuse Russian safeguards culture which is developing as the MPC&A program is implemented throughout the Russian nuclear complex. Work to support the development of Russian industry which supports the maintenance of the safeguards system.
		FY 1995 activities contained in the International Safeguards line item.	Continue to support other programs which have MPC&A elements (ISTC, STCU, HEU purchase, monitoring the plutonium production reactor shutdown, development of storage facility).

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Materials Protection, Control, and Accounting (Cont'd)		FY 1995 activities contained in the International Safeguards line item.	Continue ongoing efforts with Belarus, Latvia, Lithuania, and other countries as required to upgrade MPC&A systems at identified sites.
	$ 0	$ 0	$ 47,000
Treaties and Agreements	Funding required to maintain capability for monitoring the TTBT/PNET and support deployments.		
	Funding was requested to support other treaties and inspection activities consistent with the DOE mission.	Funding requested to support implementation of the treaties, agreements, and inspection activities consistent with the DOE mission including: purchase of excess HEU from the former Soviet Union; mutual reciprocal inspections (MRI) under the Gore/Chrenomyrdin and O'Leary/Mikhailov agreements; transparency regime for the U.S. voluntary offer for IAEA safeguards on U.S. Special Nuclear Material (SNM).	Funding requested to support implementation of arms control and nonproliferation agreements, treaties and initiatives (e.g. MRI, production reactor shutdown, IAEA visits, etc.) and other multilateral or bilateral government-to-government agreements for nonproliferation, such as possible purchases of highly enriched uranium from governments of the former Soviet Union. Work in Iraq includes providing technical support and personnel for the United Nations Special Commission on Iraq (UNSCOM) to ensure they do not reinitiate programs for weapons of mass destruction.
	$ 14,065	$ 8,075	$ 6,640
International Security			Execute international security commitments of the Administration either in the Newly Independent States (NIS) of the FSU or the Democratic Peoples Republic of Korea, including storage pool treatment and stabilization, and canning and storage for further disposition of the spent fuel from the North Korean 5MW nuclear reactor. Funds also support the Industrial Partnering Program.

III. Arms Control and Nonproliferation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Security (Cont'd)	$ 0	$ 0	$ 15,000
Program Direction	Supported salaries, benefits, and travel for 50 FTEs at Headquarters, 1 FTE at Idaho Operations Office, and 9 FTEs at Nevada Operations Office. 60.0 FTE $ 3,952	Supports salaries, benefits, and travel for 47 FTEs at Headquarters, 1 FTE at Idaho Operations Office, and 9 FTEs at Nevada Operations Office. 57.0 FTE $ 5,000	Supports salaries, benefits, and travel for 47 FTEs at Headquarters, 1 FTE at Idaho Operations Office, and 9 FTEs at Nevada Operations Office. 57.0 FTE $ 5,000
Capital Equipment	Funding was needed to establish safeguards. $ 373	Increased funding needed to establish safeguards and support the Export Control program. $ 673	Funding needed to establish safeguards, and ACDA controls. Increased funding to support the Material Protection, Control, and Accounting in the purchase of tracking and monitoring equipment for the Russian laboratories participating in the laboratory-to-laboratory program. Increased funding also supports the RERTR program in the purchase of equipment to develop high density low enriched fuel. $ 23,973
Use of Prior Year Balances	-$ 1,600	-$ 2,414	$ 0
Arms Control and Nonproliferation	60.0 FTE $ 80,032	57.0 FTE $ 74,385	57.0 FTE $ 162,364

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

INTELLIGENCE ACTIVITIES

I. Preface: Intelligence Activities

The nature and scope of the Department's intelligence activities will continue to be influenced by a variety of international events and trends. Accordingly, the use of foreign intelligence will continue to be a vital input in the formulation of Departmental policies; while at the same time, the Department continues to serve in a key role within the Intelligence Community.

The mission of the Office of Energy Intelligence is to provide the Department, other U.S. Government policymakers, and the Intelligence Community with timely, accurate, high impact foreign intelligence analyses; to deter and neutralize foreign intelligence service actions (HUMINT) in the U.S. from acquiring sensitive information (classified and unclassified) involving DOE programs, facilities, technology, and personnel; to ensure that the Department's technical, analytical and research expertise is made available to the Intelligence Community in accordance with Executive Order 12333; and to provide threat assessment support to the Department's Headquarters and field operations. The Office of Energy Intelligence provides support over a broad range of issues and topics to senior Department of Energy (DOE) officials engaged in developing policy in support of high-priority national needs and goals.

Office of Energy Intelligence activities support the Secretary of Energy's goal of maintaining national security. The intelligence program will continue to meet the Department's responsibilities in the national security arena by contributing to the credibility of our Nation's nuclear deterrent, nonproliferation, and assessments of conditions that pose a nuclear threat. Specific areas of support include nuclear proliferation; nuclear weapons security implications of the political instability of the republics of the former Soviet Union; arms control; economic science and technology; foreign environmental policies, negotiating strategies and impacts on U.S. economic competitiveness; foreign reactor safety; technology transfers; energy security, assessment of threats and counterintelligence. To this end the Office of Energy Intelligence activities support the activities of the other components of the Office of Nonproliferation and National Security (i.e., Office of Security Affairs, Office of Arms Control and Nonproliferation, the Office of Emergency Management), the Secretary, Deputy Secretary, Under Secretary, Assistant Secretary for Policy, Planning and Program Evaluation, Assistant Secretary for Defense Programs, and the Assistant Secretary for Congressional, Intergovernmental and International Affairs. For example, threat assessments are provided to Headquarters and field elements and facilitate the mission of the Office of Security Affairs. Counterintelligence treaty activity support the Office of Arms Control and Nonproliferation and overall U.S. Governmental efforts concerning international treaty implementation. Special proliferation analyses support the development of U.S. nonproliferation policy and support activities conducted by the Assistant Secretary for Congressional, Intergovernmental and International Affairs. The Department's intelligence activities are carried out by DOE Headquarters staff, national laboratories, and DOE contractors. The Office of Energy Intelligence provides DOE program offices the special classified information, which would not otherwise be available, required to carry out their missions.

The budget request will continue:

1. Technical analyses addressing increased global proliferation challenges;

2. Support of Intelligence Community estimates of activities of potential nuclear weapons states; and

3. Support for implementation of nuclear safety, security, and dismantlement assistance of nuclear weapons in the Commonwealth of Independent States.

OUTPUT MEASUREMENTS

Analysis of Foreign Intelligence Information:

1. Provide 215 intelligence briefings,

2. Publish 388 current intelligence products and studies, and

3. Train 305 Intelligence Community students.

Support to Law Enforcement:

1. Conduct 59 assessments,

2. Conduct 100 Counterintelligence travel briefings/debriefings,

3. Initiate and successfully complete 12 Counterintelligence inquiries, and

4. Provide 60 Counterintelligence awareness training sessions.

II. A. Summary Table: Intelligence Activities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 43,656	$ 41,361	$ 40,936	$ -425
Capital Equipment	1,700	1,700	1,400	-300
Use of prior year balances	-600	-380	0	380
Total, Intelligence Activities	$ 44,756	$ 42,681	$ 42,336	$ -345

II. B. Laboratory and Facility Funding Table: Intelligence Activities

Argonne National Lab (East)	$ 380	$ 360	$ 360	$ 0
Idaho National Engineering Lab	1,250	1,190	1,190	0
K-25 Site	3,640	3,450	3,450	0
Lawrence Livermore National Lab	8,664	8,210	8,210	0
Los Alamos National Laboratory	5,395	5,115	5,115	0
Nevada Operations Office	6,550	6,225	6,225	0
Office of Scientific & Technical Information	70	70	70	0
Pacific Northwest Lab	3,580	3,395	3,395	0
Richland Operations Office	145	145	145	0
Sandia National Laboratories	3,210	3,040	3,040	0
Savannah River Technology Center	400	400	400	0
Washington Headquarters	12,072	11,461	10,736	-725

II. B. Laboratory and Facility Funding Table: Intelligence Activities

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	-600	-380	0	380
Total, Intelligence Activities	$ 44,756	$ 42,681	$ 42,336	$ -345

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Intelligence Activities			
Operating Expenses	Program provided intelligence assessments of foreign government policies and market developments which could affect long-term supply and demand for energy resources worldwide, including price and availability, estimated changes in demand in the mix of energy uses, and assessments of the stability of world and regional economies. Monitoring and analyses of safety and environmental issues pertaining to foreign nuclear energy programs were provided, including ranking the safety of foreign nuclear reactors, assessing potential and existing radioactive contamination, particularly in the republics of the former Soviet Union. Provided support in the ongoing analysis of potential, existing, and advanced nuclear weapons activities worldwide and the threat to the U.S. from these activities. Analyses of nuclear capability in proliferant countries were provided, consistent with the Secretary of Energy's goal of addressing increased global nuclear proliferation challenges. Analyses identified key issues in specific national nuclear weapons programs and verified country compliance with the International	Program is continuing its scope of activities in support of the intelligence requirements of the Department and the Intelligence Community.	Program will continue its scope of activities in support of the intelligence requirements of the Department and the Intelligence Community.

III. Intelligence Activities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Atomic Energy Agency nonproliferation undertakings. Program monitored and analyzed foreign Science and Technology developments to alert the Secretary and other policymakers to foreign challenges to U.S. preeminence in technologies deemed critical to U.S. national security interests, warned Department and Intelligence Community officials of foreign interest in ongoing U.S. research efforts, assisted the Department in evaluating foreign requests for joint developments with the U.S., and monitored the implications of leading edge technology transfers worldwide.		
	Program provided threat assessments with focus on energy emergency management related assessments in various areas of the country; conducted specialized studies in specific areas of the foreign threat spectrum; monitored and analyzed domestic and foreign terrorism activities; maintained the Threat Assessment data base; provided nuclear/energy threat awareness training directed at the Intelligence and Law Enforcement Communities; provided communicated threat credibility assessments by maintaining and enhancing the capability to provide technical, operational, and behavioral assessments of specific threats involving nuclear material and/or DOE facilities; provided analyses of nuclear material black market incidents and trends; supported the conduct of technology assessments of worldwide state-of-the-art applied research and technical development activities related to counterterrorism, counternarcotics, intelligence and	Program is continuing its scope of activities.	Program will continue its scope of activities.

III. Intelligence Activities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	other Departmental national security responsibilities; and provided support to the Department's 24-hour on-call intelligence and technical response activity.		
	Program completed the development of the counterintelligence information management system data base; initiated counterintelligence analysis in support of nuclear weapons proliferation concerns (i.e., theft of nuclear weapons technology from DOE facilities); provided counterintelligence awareness training and threat briefing/debriefing programs including awareness films, posters, newsletters, and basic threat briefing guides for headquarters and field use; provided training; provided comprehensive foreign travel: briefing/debriefing programs for DOE travelers and hosts; provided support as necessary to the Department's treaty implementation activities; and continued national-level counterintelligence liaison with FBI and CIA.	Program is continuing its scope of activities.	Program will continue its scope of activities.
	Program maintained ADP systems, networks, and associated support services; provided multispectral analysis of imagery data in support of laboratory intelligence activities; and provided salaries, benefits, travel, training, and other personnel related support to 78 full-time-equivalents.	Infrastructure is continuing to be maintained.	Infrastructure will be maintained.
	78.0 FTE $ 43,656	69.0 FTE $ 41,361	68.0 FTE $ 40,936

III. Intelligence Activities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Provided capital equipment to meet the highest priority programmatic needs, and meet secure communications and classified information control requirements through the acquisition of computer hardware and system upgrades as necessary.	Capital equipment is continuing to be provided to meet the highest priority programmatic needs, and meet secure communications and classified information control requirements through the continued acquisition of computer hardware and system upgrades as necessary.	Capital equipment will continue to be provided to meet the highest priority programmatic needs, and meet secure communications and classified information control requirements through the continued acquisition of computer hardware and system upgrades as necessary.
	$ 1,700	$ 1,700	$ 1,400
Use of prior year balances	-$ 600	-$ 380	$ 0
Intelligence Activities	78.0 FTE $ 44,756	69.0 FTE $ 42,681	68.0 FTE $ 42,336

OVERVIEW

NUCLEAR SAFEGUARDS AND SECURITY

The mission of the Nuclear Safeguards and Security program is to develop measures to assure adequate, cost-efficient, and effective protection of the Department of Energy's (DOE) nuclear weapons, nuclear materials, and facilities against theft, sabotage, espionage, and terrorist activity. The mission also includes identifying classified and unclassified sensitive information critical to the national security. All activities are conducted in support of the Administration's goals for maintaining National Security and strengthening the efficiency of Government operations.

The Nuclear Safeguards and Security program is a major deterrent activity which addresses changing global situations including proliferation attempts, terrorists, criminals, extremists, and disgruntled employees as a potential threat to the National Security and the public health and safety. This is a strong infrastructure program designed to protect its major stakeholders such as the general populace, the environment, and our National Security in a cost effective manner.

Major objectives for safeguards and security over the next 5 years include:

1. Strengthen support to field elements to facilitate implementation of cost-saving safeguards and security measures.

2. Develop Department-wide strategic and long-range planning for domestic nuclear safeguards and security to meet the challenges of global and departmental change.

3. Initiate modernization effort of safeguards and security management information systems.

4. Provide a domestic technology and systems development base program to ensure that state-of-the art safeguards and security technical capabilities and procedures are available to sustain a viable safeguards and security program required for the protection of sensitive DOE facilities, special nuclear materials, and classified matter.

5. Ensure that state-of-the-art technical capabilities are available for accountability and control of nuclear material recovered from disassembled nuclear weapons returned from the stockpile, and near- and long-term storage of special nuclear materials.

6. Strengthen the role of the Safeguards and Security Central Training Academy through a vigorous professional a[illegible] career development program, by standardizing the curriculum to provide uniform, high quality training aimed at developing expertise in physica[illegible] protection, material control and accounting, technical and information security, personnel security, and other safeguards and security-related areas.

7. Develop programs that support standardization and accreditation of physical security systems.

8. Initiate an aggressive declassification program in support of the Presidential program for "reinventing" the government. This declassification effort will provide access to millions of DOE documents, while recognizing the need to protect nuclear weapons classification which has the potential to facilitate proliferation of weapons of mass destruction. We will also accelerate declassification reviews in the areas of environment, safety and health and technology transfer.

In FY 1996 the Nuclear Safeguards and Security program will continue as a key DOE infrastructure program designed to ensure state-of-the-art technology protection for the existing and future DOE complex. It is a vital program in support of nonproliferation. Program goals and objectives have been focused to ensure that physical security, material control and accountability, technical, information, and personnel security programs which address facility transition, domestic nonproliferation, arms control/treaty compliance, weapons return, and long-term storage problems associated with special nuclear material are addressed in a timely, cost-effective, and efficient manner. These goals and

objectives are balanced with the need to maximize openness in order to ensure that the public has the information it needs to fully participate in the democratic process.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

OUTPUT MEASURES

The Classification/Declassification Program activities include the review of approximately 700,000 documents for declassification purposes.

The Technology and Systems Development activities will be able to address approximately 50 percent of the customers needs.

The Central Training Academy will conduct 115 courses with approximately 180 iterations in support of a trained and qualified workforce.

Program analysis activities should result in a 3-5 percent crosscut savings and cost avoidance consistent with cost-effective policy implementation.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Nuclear Safeguards and Security

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Safeguards and Security Operational Support					
Operating Expenses	$ 41,875 a/	$ 40,468	$ 0	$ 40,468	$ 40,350
Technology and Systems Development					
Operating Expenses	$ 22,905	$ 20,155	$ 0	$ 20,155	$ 21,905
Classification/ Declassification					
Operating Expenses	$ 8,980 b/	$ 9,656	$ 3,000 c/	$ 12,656	$ 11,456
Program Direction					
Operating Expenses	$ 11,916	$ 12,142	$ 0	$ 12,142	$ 12,410
Capital Equipment					
Capital Equipment	$ 4,101	$ 3,395	$ 0	$ 3,395	$ 3,395
Construction					
Construction	$ 0	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 89,777 d/	$ 85,816	$ 3,000	$ 88,816	$ 89,516
Summary					
Operating Expenses	$ 85,676	$ 82,421	$ 3,000	$ 85,421	$ 86,121
Capital Equipment	4,101	3,395	0	3,395	3,395
Construction	0	0	0	0	0
Total Program	$ 89,777	$ 85,816	$ 3,000	$ 88,816	$ 89,516
Staffing (FTEs)					
Headquarters	143	143	0	143	143
Field	66	66	0	66	66
Total Staffing	209	209	0	209	209

LEAD TABLE - Nuclear Safeguards and Security (cont'd)

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"
P.L. 95-242, "Nuclear Non-Proliferation Act of 1978"
P.L. 103-62, "Government Performance and Results Act of 1993"

a/ Reflects reduction of $.011 million for Small Business Technology Transfer (STTR) program assessment.
b/ Reflects reprogramming of $4.0 million of prior year funding from the Security Investigations budget.
c/ Reflects reprogramming of $3.0 million from programs in the Other Defense Activities appropriation.
d/ Reflects contractor pay freeze reduction of $1.013 million.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Nuclear Safeguards and Security

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Mound Plant	$ 965	$ 973	$ 0	$ 973	$ 838
Los Alamos National Laboratory	8,280	7,131	0	7,131	8,444
Sandia National Laboratories	9,721	8,706	0	8,706	9,166
Albuquerque Operations Office	8,558	8,930	0	8,930	8,930
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 27,524	$ 25,740	$ 0	$ 25,740	$ 27,378
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (West)	$ 205	$ 173	$ 0	$ 173	$ 160
Argonne National Lab (East)	267	274	0	274	274
Brookhaven National Lab	552	427	0	427	565
Chicago Operations Office	1,503	1,532	0	1,532	1,532
New Brunswick Lab	4,303	4,295	0	4,295	4,295
Subtotal, CHICAGO OPERATIONS OFFICE	$ 6,830	$ 6,701	$ 0	$ 6,701	$ 6,826
IDAHO OPERATIONS OFFICE					
Idaho Operations Office	$ 787	$ 827	$ 0	$ 827	$ 827
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 4,984	$ 3,374	$ 0	$ 3,374	$ 2,129
Oak Ridge Institute for Science & Education	548	563	0	563	563
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 5,532	$ 3,937	$ 0	$ 3,937	$ 2,692
RICHLAND OPERATIONS OFFICE					
Richland Operations Office	$ 3,747	$ 4,030	$ 0	$ 4,030	$ 3,230
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 4,007	$ 3,309	$ 0	$ 3,309	$ 4,041

FIELD OFFICE FUNDING BY SITE - Nuclear Safeguards and Security (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
WASHINGTON HEADQUARTERS					
Office of Scientific & Technical Information	$ 40	$ 30	$ 0	$ 30	$ 180
Washington Headquarters	29,394	32,100	0	32,100	31,932
Subtotal, WASHINGTON HEADQUARTERS	$ 29,434	$ 32,130	$ 0	$ 32,130	$ 32,112
ALL OTHER	$ 11,916	$ 9,142	$ 3,000	$ 12,142	$ 12,410
TOTAL	$ 89,777	$ 85,816	$ 3,000	$ 88,816	$ 89,516

SUMMARY OF CHANGES

Nuclear Safeguards and Security

FY 1995 Appropriation	$ 85,816
- Adjustment - Reprogramming for Declassification activities	+3,000
FY 1995 Adjusted	$ 88,816

Safeguards and Security Operational Support

- Nuclear Materials Management and Safeguards System (NMMSS) - Decrease results from replacement of NMMSS by the International Nuclear Analysis Program in the Office of Arms Control and Nonproliferation	-1,000
- Headquarters Guard Contract - Provides support for the Headquarters protective force contract reflecting an estimated contract adjustment	-400
- Personnel Security - Decrease reflects the transitioning of the Central Personnel Clearance Index and Classified Visitor Control System to the Security Investigations budget	-220
- Additional Support - Provides funding for support services contract, technical and engineering support to field offices including engineering and design of access control at Headquarters, maintenance of installed security alarm systems at Headquarters, and required automated office support systems/software and telecommunications equipment	+1,502

Technology and Systems Development

- Science and Technology Base Development - Decrease reflects the descoping of several projects and the transition of several projects to the next developmental phase	-1,100
- Concept and Demonstrational Development - Increase supports multiple projects, primarily in the area of physical security, that are transitioning from the previous development phase. Enhancements within physical security will include more efficient and effective access delay capabilities and the implementation of a complex-wide automated access control system	+1,987
- Full Scale Development - Increase reflects projects that are transitioning from the previous development phase	

SUMMARY OF CHANGES - Nuclear Safeguards and Security (cont d)

Technology and Systems Development (cont'd)

as well as increased support for technology transfer to private industry and the DOE complex through development of technical safeguards and security curriculum	+863

Classification/ Declassification

- Classification/ Declassification Resources - Provides for accelerated review of technical classification guidance which decreases the number of new documents classified, further supports accelerated level of review of documents, and expands support to DOE field and other Headquarters offices to support stakeholder requests. The reduction of $1.2 million from FY 1995 to FY 1996 is a net result of the $3.0 million reprogramming received in FY 1995	-1,200

Program Direction

- Program Direction - Provides funding to support Program Direction at the FY 1995 level of 209 FTEs	+268
FY 1996 CONGRESSIONAL Budget Request	$ 89,516

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR SAFEGUARDS AND SECURITY

I. Preface: Safeguards and Security Operational Support

The New Brunswick Laboratory, which is the Center of Excellence in nuclear materials measurement, serves as a technical extension of the Office of Safeguards and Security in areas of measurement science and material accounting. The Nuclear Materials Management and Safeguards System which was the national data base and information support system for nuclear materials under the safeguards controls and special accounting procedures of the United States Government, is being replaced by the International Nuclear Analysis program and is supported in the budget of the Office of Arms Control and Nonproliferation. Safeguards and Security Operational Support provides for the overall improvement of safeguards and security activities. This support ensures that Information Security, Security Education Briefing and Awareness, Operations Security, Personnel Security, and the Central Training Academy are effective activities. Additionally, this support also provides for effective Headquarters operations (e.g., guard force, safeguards and security support services).

Activities identified in this section of the budget provide the essential technical and analytical expertise to ensure effective and efficient security for field elements; reviews which ensure cost-saving measures in Safeguards and Security throughout the Department; standardized safeguards and security training responsive to the challenges of the changing post-cold war era; and office automation modernization geared to a more responsive and efficient operation. The program analysis activities being performed should result in a 3-5 percent crosscut savings and cost avoidance consistent with cost-effective policy implementation. Additionally, the Central Training Academy will conduct 115 courses with approximately 180 iterations in support of a trained and qualified workforce.

II. A. Summary Table: Safeguards and Security Operational Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
New Brunswick Laboratory (NBL)	$ 4,083	$ 4,088	$ 4,088	$ 0
Nuclear Materials Management and Safeguards System (NMMSS)	2,330	1,000	0	-1,000
Central Training Academy	7,933	8,867	8,867	0
Information Security	1,648	1,617	1,617	0
Security Education Briefing and Awareness	181	181	181	0
Headquarters Guard Contract	9,296	10,029	9,629	-400
Personnel Security	1,190	705	485	-220
Additional Support	15,214	13,981	15,483	1,502
Total, Safeguards and Security Operational Support	$ 41,875	$ 40,468	$ 40,350	$ -118

II. B. Laboratory and Facility Funding Table: Safeguards and Security Operational Support

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 8,433	$ 8,867	$ 8,867	$ 0
Argonne National Lab (East)	267	274	274	0
Chicago Operations Office	1,503	1,532	1,532	0
Idaho Operations Office	787	827	827	0
Lawrence Livermore National Lab	0	0	0	0
New Brunswick Lab	4,083	4,088	4,088	0
Oak Ridge Institute for Science & Education	548	563	563	0
Oak Ridge Operations Office	2,663	1,333	333	-1,000
Richland Operations Office	2,128	2,180	2,390	210
Washington Headquarters	21,463	20,804	21,476	672
Total, Safeguards and Security Operational Support	$ 41,875	$ 40,468	$ 40,350	$ -118

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Safeguards and Security Operational Support			
New Brunswick Laboratory (NBL)	NBL is vital to the Nuclear Safeguards and Security program in performance of nuclear safeguards Materials Control and Accounting (MC&A) activities in the areas of measurements, facility assessments, and technical assistance, as the nation's nuclear standards laboratory, and for development of reference materials to meet the needs of domestic safeguards requirements for nuclear measurement control and calibration. As a Government-owned Government-operated analytical chemistry laboratory, NBL performs technical audits of MC&A practices in the DOE complex to assess special nuclear material (SNM) protection system effectiveness.	NBL provides technical expertise to the Nuclear Safeguards and Security program in performance of nuclear safeguards Materials Control and Accounting (MC&A) activities in the areas of measurements, facility assessments, and technical assistance. It is the nation's nuclear standards laboratory for development of reference materials to meet requirements for nuclear measurement control and calibration for verification of materials in process or storage. As a Government-owned Government-operated analytical chemistry laboratory, NBL performs technical audits of MC&A practices in the DOE complex to assess special nuclear material (SNM) protection system effectiveness.	NBL provides technical expertise to the Nuclear Safeguards and Security program in performance of nuclear safeguards Materials Control and Accounting (MC&A) activities in the areas of measurements, facility assessments, and technical assistance. It is the nation's nuclear standards laboratory for providing reference materials to meet requirements for nuclear measurement control and calibration for verification of materials in process or storage. As a Government-owned Government-operated analytical chemistry laboratory, NBL performs technical audits of safeguards practices in the DOE complex to assess special nuclear material (SNM) protection system effectiveness.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
New Brunswick Laboratory (NBL) (Cont'd)	NBL provides onsite assistance to DOE facilities to improve MC&A practices and to resolve deficiencies, particularly in the area of materials accountability. Improves quality of nuclear measurements to minimize material loss-detection sensitivity and reduce inventory differences. Ensures that DOE HQ MC&A policy is technically achievable, sound, and meets vital SNM protection goals, and assists in the implementation of this policy in the field.	NBL provides onsite assistance to DOE facilities to improve MC&A practices and to resolve deficiencies, particularly in the area of materials accountability and to identify methods to reduce uncertainty in inventory quantities. In addition, NBL provides recommendations for new analytical techniques or identifies possible treatment methods which may reduce quantities of hazardous mixed waste generated from nuclear materials measurements. Ensures that DOE HQ MC&A policy is technically achievable, sound, and meets vital SNM protection goals, identifies needed changes, and assists in the implementation of this policy in the field.	NBL provides onsite assistance to DOE facilities to improve MC&A practices, to resolve MC&A deficiencies, and to identify methods to reduce uncertainty in inventory quantities. NBL serves as a technical extension of DOE/HQ in the area of destructive assay of special nuclear materials (SNM). NBL ensures that DOE/HQ MC&A policy is technically achievable, sound, and meets vital SNM protection goals; identifies needed changes; and assists in the implementation of this policy in the field.
	NBL supports, at a reduced level, mission planning team efforts associated with facility transition, weapons dismantlement, and SNM storage initiatives by providing technical counsel and evaluating and recommending safeguards strategies to ensure that these initiatives meet essential SNM protection goals; and DOE's annual assessment of safeguards policy and implementation contained in reports to the legislative and executive branches of the Government.	NBL will support mission planning team efforts associated with facility transition, weapons dismantlement, and SNM storage initiatives by providing technical counsel and evaluating and recommending safeguards strategies to ensure that these initiatives meet essential SNM protection goals; and DOE's annual assessment of safeguards policy and implementation contained in reports to the legislative and executive branches of the Government.	NBL supports mission planning efforts, evaluation and recommendation of safeguards strategies to ensure SNM protection goals are met, the annual assessment of safeguards policy and implementation contained in reports to the legislative and executive branches of the Government, and nuclear material anomaly response teams
	Supports work in the development of nondestructive assay (NDA) reference materials for measurement control and calibration use within the DOE complex.	Supports work in the development of nondestructive assay (NDA) reference materials for measurement control and calibration use within the DOE complex.	Performs verification measurements in support of identified DOE customers. The support activities for a nondestructive assay (NDA) reference material for measurement control and calibration will be provided by NBL. NBL operates an interlaboratory measurement control program to support DOE-wide measurement control.

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III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
New Brunswick Laboratory (NBL) (Cont'd)	Begins development of guidance to support DOE-wide measurement control and improvement initiatives, including operation of an interlaboratory measurement control program. Provides some expansion of interlaboratory program to include additional materials of safeguards interest.	Develops guidance to support DOE-wide measurement control and improvement initiatives, including operation of an interlaboratory measurement control program.	Develops guidance to support DOE-wide measurement control and improvement initiatives, including operation of an interlaboratory measurement control program.
	Fulfills mandatory Safeguards and Security, Environment, Safety and Health, quality assurance/control, and waste management requirements associated with the operation of an analytical laboratory handling nuclear materials.	Fulfills mandatory Safeguards and Security, Environment, Safety and Health, quality assurance/control, and waste management requirements associated with the operation of an analytical chemistry laboratory handling nuclear materials.	Fulfills mandatory Safeguards and Security, Environment, Safety and Health, quality assurance/control, and waste management requirements associated with the operation of an analytical chemistry laboratory handling nuclear materials.
	Assists in MC&A training development initiatives.	Assists in MC&A training development initiatives.	Assists in MC&A training development initiatives.
	New Brunswick Laboratory is managed and operated by 45 Federal FTE's.	New Brunswick Laboratory is managed and operated by 45 Federal FTE's.	New Brunswick Laboratory is managed and operated by 45 Federal FTE's.
	45.0 FTE $ 4,083	45.0 FTE $ 4,088	45.0 FTE $ 4,088
Nuclear Materials Management and Safeguards System (NMMSS)	NMMSS was operated and maintained for DOE by Martin Marietta Energy Systems, Inc., at the Oak Ridge Operations Office to provide a national nuclear materials database and information center to support domestic safeguards and materials management activities and fulfill international treaty and agreement obligations. (NMMSS functions as the states' system of accounting and control of nuclear material for the U.S. Government which is required of states, such as the U.S., which are signatories to the Nuclear Non-Proliferation Treaty.)	NMMSS is operated for DOE by Martin Marietta Energy Systems, Inc., at the Oak Ridge Operations Office in Tennessee. NMMSS is operated and maintained to provide a national nuclear materials database and information center to support domestic safeguards and materials management activities and fulfill international treaty and agreement obligations. (NMMSS functions as the state's system of accounting and control of nuclear material for the U.S. Government which is required of states, such as the U.S., which are signatories to the Nuclear Non-Proliferation Treaty.)	No activity, NMMSS is replaced by the International Nuclear Analysis program in the Office of Arms Control and Nonproliferation.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Materials Management and Safeguards System (NMMSS) (Cont'd)	The system provides nuclear material import/export information to domestic agencies and the International Atomic Energy Agency (IAEA) pursuant to peaceful use of nuclear energy and other nuclear nonproliferation interests; monitors foreign-origin nuclear materials within the U.S. and U.S.-origin nuclear materials both domestically and abroad; and provides routine reports and answers to inquiries from Congress, the IAEA, and materials management, intelligence, and safeguards and security groups within the U.S. concerning the status of nuclear material inventories and transactions.	The system provides nuclear material import/export information to domestic agencies and the International Atomic Energy Agency (IAEA) pursuant to peaceful use of nuclear energy and other nuclear nonproliferation interests; monitors foreign-origin nuclear materials within the U.S. and U.S.-origin nuclear materials both domestically and abroad; and provides routine reports and answers to inquiries from Congress, the IAEA, and materials management, intelligence and safeguards and security groups within the U.S. concerning the status of nuclear material inventories and transactions.	No activity, NMMSS is replaced by the International Nuclear Analysis program in the Office of Arms Control and Nonproliferation.
	Limited improvements were made to NMMSS's computerized information systems to accommodate additional reporting requirements from multilateral nuclear agreements being put into force.	No activity.	No activity.
	Supports processing, on a limited basis, special requests such as those by program offices and field offices in support of safeguards activities, facility profile updates, and Freedom of Information Act requests. Supports materials management activities as funding and resources are available.	The Office of Arms Control and Nonproliferation is developing the International Nuclear Analysis program to support domestic and international material control and accountability reporting, nonproliferation, safeguards, and intelligence requirements. This system has the potential to replace NMMSS and provide a comprehensive and accurate worldwide nuclear material database. NMMSS will be operated parallel to the Arms Control and Nonproliferation system until NMMSS consolidation is completed. Consolidation is anticipated in early FY 1995.	No activity, NMMSS is replaced by the International Nuclear Analysis program in the Office of Arms Control and Nonproliferation.
	$ 2,330	$ 1,000	$ 0

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Central Training Academy	The Central Training Academy (CTA) serves as the Department's center of expertise for safeguards and security training development. It is located at the Kirtland Air Force Base in Albuquerque, New Mexico, and is operated by Wackenhut Services, Inc. Approximately 104 courses with 164 iterations were conducted during this fiscal year. CTA provides onsite and facility training for safeguards and security personnel to ensure that DOE maintains a well-trained and qualified workforce to protect the nation's vital nuclear and energy interests; and collaborates with safeguards and security and other organizations (i.e., intelligence and law enforcement) to develop training to ensure consistency, completeness, and effectiveness.	The Central Training Academy (CTA) serves as the Department's center of expertise for safeguards and security training development. It is located at the Kirtland Air Force Base in Albuquerque, New Mexico, and is operated by Wackenhut Services, Inc. Approximately 112 courses with 176 iterations will be conducted during this fiscal year. CTA uses traditional and distant learning technology to provide onsite and facility training for safeguards and security personnel ensuring that DOE maintains a well-trained workforce to protect the nation's vital nuclear and energy interests; and collaborates with safeguards and security and other organizations (i.e., intelligence and law enforcement) to develop training to ensure consistency, completeness, and effectiveness.	The Central Training Academy (CTA) serves as the Department's center of excellence for safeguards and security (S&S) training and training development. The CTA is located on Kirtland Air Force Base in Albuquerque, New Mexico, and is operated via a support services contract. Approximately 115 courses with 180 iterations will be conducted during this fiscal year. The CTA uses both traditional and distance learning technologies to provide onsite and facility training for safeguards and security personnel ensuring that DOE maintains a well-trained workforce to protect the nation's vital nuclear and energy interests against espionage, sabotage or theft. The CTA collaborates with Federal intelligence organizations and other Federal, state, and local law enforcement agencies to develop training that is current, complete and effective against a spectrum of threats.
	Conducts and modifies training programs incorporating activities essential to meeting current and future Departmental programs and missions. Establishment of a safeguards and security professional career development program is in process.	Conducts, modifies, and expands training programs incorporating standardized activities essential to meeting current and future Departmental programs and missions. Refines the safeguards and security professional career development program.	Conducts, modifies, and expands training programs incorporating standardized activities essential to meeting current and future Departmental programs and missions. Reviews and refines the safeguards and security professional career development program.
	The CTA provides assistance to all Departmental elements assuring that training requirements support changing protection strategies.	The CTA provides assistance to all Departmental elements assuring that training requirements support changing protection strategies.	The CTA provides training assistance to other Departmental elements assuring that training remains current, relevant and supports changing program requirements and protection strategies.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Central Training Academy (Cont'd)	Assesses safeguards and security training performance at sites and field training needs.	Assesses safeguards and security field training needs and training performance at sites, and develops training to meet needs.	Assesses safeguards and security field training needs and site training program performance and develops training courses to meet these needs.
	Refines the Training Assessment Records Utilization System (TARUS) and produce requested reports.	Assures level of operating for the Training Assessment Records Utilization System (TARUS) program and produce requested reports.	Operates and maintains the Training Assessment Records Utilization System (TARUS) and produces requested training reports such as total CTA training accomplished per fiscal year, students trained by site and discipline per fiscal year, and individual student training per fiscal year.
	Further expand distant learning activities to include correspondence, computer-based training (including interactive and audio/video capabilities), remote and onsite training capabilities, and mobile training team activities.	Through the Distant Learning Training (DLT) Project, Security Affairs will control total safeguards and security training costs allowing the CTA to produce and deliver state-of-the-art, standardized training in specialized areas to sites. This project allows significantly increased opportunities for training in these specialized areas while eliminating cost associated with travel, per diem, car rental, staff absences, and overtime. The DLT Project will include satellite transmission of CTA training to each Departmental site and through modern interactive methods allow each student to be part of the instructional process. This concept allows almost limitless opportunities to address large and geographically diverse audiences in a cost effective manner. DLT also includes computer-based training (interactive and audio/video), correspondence, and onsite training.	With the establishment of the Distance Learning Training (DLT) Center, Security Affairs will significantly reduce total safeguards and security "user" costs to other DOE organizations via the CTA producing and delivering state-of-the-art, standardized training in specialized areas simultaneously to multiple DOE sites. The DLT methodology includes satellite transmission of CTA training to multiple DOE sites and, through the use of modern interactive technology, allows each student to be part of the instructional process. DLT also includes computer-based training, interactive audio/video training and correspondence courses. This training methodology greatly increases the training opportunities while eliminating costs to the student associated with travel and staff absences.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Central Training Academy (Cont'd)	No activity.	Performs curricula and safeguards and security research and development, training needs assessment, and provides training support such as printing, computer graphics, and technical and material firing range assistance impacting all CTA activities.	Performs safeguards and security training curricula research and development, conducts training needs assessments, and provides training support such as printing, computer graphics, video production and editing, as well as technical and logistical assistance relative to operating live firing ranges, all of which are essential to CTA training activities.
	No activity.	Performs comprehensive quality and compliance functions and day-to-day contract administration functions.	Performs comprehensive environment, safety, and health (ES&H), quality, and other self-assessment evaluations of CTA training and day-to-day operational activities.
	No activity.	Performs external liaison with other Federal, State, and local agencies.	Performs external liaison with other Federal, State, and local agencies.
	No activity.	Provides support for the CTA campus and live firing range facility activities and grounds such as capital and instructional equipment maintenance, janitorial, grounds maintenance, and facility utility repairs.	Provides maintenance support for all CTA buildings, equipment, and grounds at both the campus and live firing range sites. Equipment maintenance includes all training equipment, building mechanical systems, utility systems and various vehicles and power equipment needed for CTA operations.
	$ 7,933	$ 8,867	$ 8,867
Information Security	The Information Security program provides support in the areas of classified matter protection and control, technical security, information systems security, operation security, and foreign ownership, control or influence.	The Information Security program will provide support in the areas of classified matter protection and control, technical security, information systems security, operation security, and foreign ownership, control or influence.	The Information Security program will provide support in the areas of classified matter protection and control, technical security, information systems security, operation security, and foreign ownership, control or influence.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Information Security (Cont'd)	The Technical Surveillance Countermeasures (TSCM) program is a team of experts provided through a HQ technical support contract. The TSCM program is intended to ensure and enhance the security provided for selected DOE and DOE contractor facilities in the greater Washington, DC area. TSCM support to sensitive DOE HQ's facilities and operations continued. Specific objectives are to detect and deny the efforts of hostile intelligence or industrial espionage collection operations to penetrate sensitive installations in order to steal technology and sensitive or classified information. Increased visits from sensitive and nonsensitive foreign countries to DOE facilities continue to increase the technical risk to sensitive and classified information. ($465)	The Technical Surveillance Countermeasures (TSCM) program is intended to ensure and enhance the security provided for selected DOE and DOE contractor facilities in the greater Washington, D.C. area. The team provides TSCM support to sensitive DOE HQ's facilities and operations to detect and deny the efforts of hostile intelligence or industrial espionage collection operations which could penetrate sensitive installations and steal technology, sensitive, and/or classified information. The team conducts surveys, inspections, and technical analysis to inform DOE of technical surveillance threats. Increased visits from sensitive and nonsensitive foreign countries to DOE facilities continue to increase the technical risk to sensitive and classified information. ($465)	The Technical Security Program, formerly the Technical Surveillance Countermeasures (TSCM), is intended to ensure and enhance the security provided for selected DOE and DOE contractor facilities in the greater Washington, D.C. area. The team provides technical security support to sensitive DOE Headquarters's facilities and operations to detect and deny the efforts of foreign intelligence or industrial espionage collection operations which could penetrate sensitive installations and steal technology, sensitive and/or classified information. The team conducts surveys, inspections, and technical analysis to inform DOE of technical surveillance threats. Increased visits from sensitive and nonsensitive foreign countries to DOE facilities continue to increase the technical risk to sensitive and classified information. ($465)
	The Technical Surveillance Countermeasures (TSCM) program, as supported by the Technical Security Resource Center (TSRC), has been integrated into the existing Information Security Resource Center (ISRC) tasking. The funding previously allotted to this task has been subsequently transferred to the ISRC tasks.	See ISRC section.	See ISRC section.
	The former TSRC tasking was integrated into the ISRC with no change to mission or responsibilities.	See ISRC section.	See ISRC section.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Information Security (Cont'd)	The Information Security Resource Center (ISRC) is located at Battelle's Pacific Northwest Laboratory in Richland, Washington. It incorporates technical expertise and professional development of training and issues related to information security. The former ISRC tasking was integrated into the ISRC with no change to mission or responsibilities. The information security support training methodology is coordinated through the CTA and is focused on programs to integrate DOE-wide information security. The information security system, policies, and procedures for controlling and protecting classified and sensitive information from unauthorized disclosure must improve. The ISRC ensures we have a program to address the management, training, procedures, equipment, and consolidation of these elements for the protection of classified and unclassified sensitive information during creation, utilization, storage, transmission link, reproduction and destruction. The ISRC provides information security research and development capability, specialized training as needed, and coordinates each information security discipline into an integrated, cohesive single program. The ISRC is the only facility where DOE Technical Surveillance Countermeasures (TSCM) contractor personnel can obtain the necessary TSCM training and certification in accordance with the requirements established in the President's Report to Congress on the State of the Nation's Counterintelligence and Security Countermeasures Plans, Programs and Procedures. All technical	The Information Security Resource Center (ISRC) is located at Battelle's Pacific Northwest Laboratory in Richland, Washington. It incorporates technical expertise and professional development of training and issues related to information security. The former ISRC tasking was integrated into the ISRC with no change to mission or responsibilities. The information security support training methodology is coordinated through the CTA and is focused on programs to integrate DOE-wide information security. The information security system, policies, and procedures for controlling and protecting classified and sensitive information from unauthorized disclosure must improve. The ISRC ensures we have a program to address the management, training, procedures, equipment, and consolidation of these elements for the protection of classified and unclassified sensitive information during creation, utilization, storage, transmission link, reproduction and destruction. The ISRC provides information security research and development capability, specialized training as needed, and coordinates each information security discipline into an integrated, cohesive single program. The ISRC is the only facility where DOE Technical Surveillance Countermeasures (TSCM) contractor personnel can obtain the necessary TSCM training and certification in accordance with the requirements established in the President's Report to Congress on the State of the Nation's Counterintelligence and Security Countermeasures Plans, Programs and Procedures. All technical	The Information Security Resource Center (ISRC) is located at Battelle's Pacific Northwest Laboratory in Richland, Washington. It incorporates technical expertise and professional development of training and issues related to information security. The former ISRC tasking was integrated into the ISRC with no change to mission or responsibilities. The information security support training methodology is coordinated through the CTA and is focused on programs to integrate DOE-wide information security. The information security system, policies, and procedures for controlling and protecting classified and sensitive information from unauthorized disclosure must improve. The ISRC ensures we have a program to address the management, training, procedures, equipment, and consolidation of these elements for the protection of classified and unclassified sensitive information during creation, utilization, storage, transmission link, reproduction and destruction. The ISRC provides information security research and development capability, specialized training as needed, and coordinates each information security discipline into an integrated, cohesive single program. The ISRC is a DOE Technical Surveillance Countermeasures (TSCM) training resource at which contractor personnel can obtain certain TSCM training and certification in accordance with the requirements established in the President's Report to Congress on the State of the Nation's Counterintelligence and Security Countermeasures Plans, Programs and Procedures. All technical

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Information Security (Cont'd)	and nontechnical training courses are continually reviewed for applicability and validity to the security needs of the Department. TSCM certification and 3-year recertification procedures are reviewed and revised to address new programmatic concepts and needs. A proposed classified TSCM computer network was evaluated in order to provide real-time information and assistance to all TSCM personnel from both the TSRC and the Program Managers Office. Total funding for the ISRC reflects the added funds resulting from the integration of the TSRC tasks. ($1,183)	and nontechnical training courses are continually reviewed for applicability and validity to the security needs of the Department. TSCM certification and 3-year recertification procedures are reviewed and revised to address new programmatic concepts and needs. A proposed classified TSCM computer network will be evaluated in order to provide real-time information and assistance to all TSCM personnel from both the TSRC and the Program Managers Office. Total funding for the ISRC reflects the added funds resulting from the integration of the TSRC tasks. ($1,152)	and nontechnical training courses are continually reviewed for applicability and validity to the security needs of the Department. Initiate development of a classified TSCM computer network to provide real-time information and assistance to all TSCM personnel from both the TSRC and the Program Managers Office. ($1,152)
	$ 1,648	$ 1,617	$ 1,617
Security Education Briefing and Awareness	Support for Security Education Briefing and Awareness is carried out by Argonne National Laboratory, Illinois; Oak Ridge Institute of Science and Education, Tennessee; and DOE HQ personnel.	Support for Security Education Briefing and Awareness is carried out by Argonne National Laboratory, Illinois; Oak Ridge Institute of Science and Education, Tennessee; and DOE HQ personnel.	Provides support for Security Education Briefing and Awareness to reflect changing policies and procedures. Support is carried out by Argonne National Laboratory, Illinois; Oak Ridge Institute of Science and Education, Tennessee; and DOE HQ personnel.
	Create and update videotapes and related materials presented to employees to ensure knowledge of their security responsibilities when initially hired, granted a DOE access authorization or proposing foreign travel, given annual refresher briefings, and upon termination of employment, in accordance with DOE orders and other mandates. ($103)	Create and update videotapes and related materials presented to employees to ensure knowledge of their security responsibilities when initially hired, granted a DOE access authorization or proposing foreign travel, given annual refresher briefings, and upon termination of employment, in accordance with DOE orders and other mandates. ($103)	Create and update videotapes and related materials presented to employees to ensure knowledge of their security responsibilities when initially hired, granted a DOE access authorization or proposing foreign travel, given annual refresher briefings, and upon termination of employment, in accordance with DOE orders and other mandates. ($103)

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Security Education Briefing and Awareness (Cont'd)	Coordinates security education workshops and meetings for the exchange of resources and dissemination of security education information and assist contractors in establishing supporting briefing materials. Continue to assist in the National Industrial Security Program (NISP) effort. Assists security education working group, under the Central Training Academy (CTA), by identifying needs for resources to support effective security education programs and developing the knowledge, skills, and abilities of Security Education Coordinators. ($78)	Coordinates and participates in security education workshops and meetings for the exchange of resources and dissemination of security education information and assist contractors in establishing supporting briefing materials. Assists in the National Industrial Security Program (NISP) effort. Assists security education working group, under the Central Training Academy (CTA), by identifying needs for resources to support effective security education programs and developing the knowledge, skills, and abilities of Security Education Coordinators. ($78)	Coordinates and participates in security education workshops and meetings for the exchange of resources and dissemination of security education information and assist contractors in establishing supporting briefing materials. Assists security education working group by identifying needs for resources to support effective security education programs and developing the knowledge, skills, and abilities of Security Education Coordinators. Evaluate available material from other Federal agencies for use in DOE program and maintain a clearinghouse for the material. ($78)
	$ 181	$ 181	$ 181
Headquarters Guard Contract	A new protective force contract was put in place in FY 1994, and new contract rates resulted in increased costs. The HQ protective force contract provides security, including upgrades in quality of service, for the protection of Government property, classified matter, and personnel at HQ buildings.	The HQ's protective force contract provides security, including upgrades in quality of service, for the protection of Government property, classified matter, and personnel at HQ buildings.	The HQ's protective force contract provides security, including upgrades in quality of service, for the protection of Government property, classified matter, and personnel at HQ buildings. Anticipate that new protective force contract will be put in place in FY 1995.
	$ 9,296	$ 10,029	$ 9,629
Personnel Security	Researches, develops, and distributes Personnel Security Assurance Program (PSAP)-related guidance documents and training materials; provides technical and operational support to the DOE PSAP Program Manager; provides technical support to sites implementing PSAP; evaluates medical, legal, security, psychological, and management components of PSAP, and validates those components as required. Researches technical and legal aspects of drug testing and alcohol testing and	Provides for the research, development, and distribution of Personnel Security Assurance Program (PSAP)-related guidance documents and training materials; provides technical and operational support to the DOE PSAP Program Manager; provides technical support to sites implementing PSAP; evaluates medical, legal, security, psychological, and management components of PSAP, and validates those components as required. Researches technical and legal aspects of drug	Evaluates, reviews, and develops guidance and documents for use in evaluating the Personnel Security Assurance Program (PSAP) as it relates to medical, psychological, legal, security, and management components. Prepares revised training and support materials based on training evaluation and validation process. Provides technical and operational support to PSAP sites and to the DOE PSAP Program Manager. Monitors ongoing training activities and assists in reviewing

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Security (Cont'd)	provides documentation; conducts workshops and seminars addressing PSAP implementation, program changes, and the impact on the DOE community. Updates previous technical guidelines and training materials; conducts PSAP quality assurance effort and provide report to DOE HQ. Devises PSAP statistical information gathering system; expands PSAP telecommunications network. Assists DOE in National Industrial Security Program (NISP) effort, as required; assists in validation of training at Central Training Academy as required; conducts a review and analysis of security incidents to assess possible predictive trends; conducts a review and statistical analysis of PSAP, Personnel Assurance Program, Accelerated Access Authorization Program (AAAP), and other DOE human reliability programs; continues to support the Personnel Security Policy Branch through research and analysis of personnel security related topics. ($265)	testing and alcohol testing and provides documentation; conducts workshops and seminars addressing PSAP implementation, program changes, and the impact on the DOE community. Updates previous technical guidelines and training materials; conducts PSAP quality assurance effort and provides report to DOE HQ. Devises PSAP statistical information gathering system; expands PSAP telecommunications network. Assists DOE in National Industrial Security Program (NISP) effort, as required; assists in validation of training at Central Training Academy as required; conducts a review and analysis of security incidents to assess possible predictive trends; conducts a review and statistical analysis of PSAP, Personnel Assurance Program, Accelerated Access Authorization Program (AAAP) and supports the Personnel Security Policy Branch through research and analysis of topics related to personnel security. ($275)	these activities for programmatic consistency. Develop and distribute a quarterly PSAP newsletter. Reviews and prepares technical information including legal reviews relating to current and proposed substance abuse and alcohol testing policies. Conducts workshops and seminars addressing PSAP programs changes, and the impact on the DOE community. Updates previous technical guidelines and training materials, conducts PSAP quality assurance effort, and provides report to DOE HQ. Conducts surveys to gather PSAP statistical information. Expands PSAP telecommunications network through the electronic Bulletin Board System (BBS) available to DOE and DOE contractor personnel. Supports the Personnel Security Policy Branch through research and analysis of topics related to personnel security. ($275)
	Provides for the operation of AAAP at the Albuquerque Operations Office. The purpose of the AAAP is to provide DOE with a mechanism to approve individuals for a "Q" clearance in an expedited manner prior to completion of the required background investigation. The program consists of tests administered to individuals to ensure their trustworthiness and reliability: testing for substance abuse, a counterintelligence-type polygraph, and a psychological evaluation. ($500)	In FY 1995, the operations portion of the AAAP transitions from the Nuclear Safeguards and Security budget to the Security Investigations budget.	No activity.

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Security (Cont'd)	Develops Accelerated Access Authorization (AAAP)-related guidance documents; supports research and analysis for the AAAP; reviews revisions to AAAP implementation plans; provides quality assurance over AAAP; and provides guidance and technical expertise on drug testing portion of AAAP. ($205)	Develops Accelerated Access Authorization Program (AAAP)-related guidance documents; supports research and analysis for the AAAP; reviews revisions to AAAP implementation plans; provides quality assurance over AAAP psychological portion; and provides guidance and technical expertise on drug testing portion of AAAP. ($210)	Researches and prepares technical documents to support the Accelerated Access Authorization Program (AAAP); evaluates structured interview components for inclusion into the AAAP; provides quality assurance over psychological portion of AAAP; identifies relevant information for evaluating the AAAP for programmatic consistency. Reviews and analyzes various psychological assessment tools for enhancing the AAAP. Conduct surveys to gather AAAP statistical information for validation of program mission. Provide technical and operational support to AAAP Program Manager to determine current status of science and technology in the AAAP component areas. Conduct research on the utility of the counterintelligence scope polygraph in the 5-year reinvestigation process. Research the validity of derogatory criteria currently used by interviewing former foreign intelligence specialists. ($210)
	Supports modernization of the Central Personnel Clearance Index (CPCI) and the Classified Visitor Control System (CVCS) allowing electronic interchange of information between field elements and HQ. Incorporate "badge control" effort (smart cards) to ensure compatibility with the CVCS. ($220)	Additional modernization of the Central Personnel Clearance Index (CPCI) and the Classified Visitor Control System (CVCS) to allow electronic interchange of information between field elements and HQ. The "badge control" effort (smart cards) will ensure compatibility with the CVCS. ($220)	In FY 1996, the Central Personnel Clearance Index (CPCI) and Classified Visitor Control System (CVCS) transition from the Nuclear Safeguards and Security budget to the Security Investigations budget. ($0)
	$ 1,190	$ 705	$ 485

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Additional Support	Provides for the first full year of implementation of the new support services contract. This includes increased support to field elements for implementation of cost-saving safeguards and security measures. This contract provides safeguards and security technical, analytical, and administrative support which is required to allow the program to meet existing program issues and problems in addition to new activities associated with arms control and nonproliferation, weapon returns, and a post cold war environment. Also included in this contract support are security operations such as badging, fingerprinting, security briefings at HQ, etc. The success of continued timely security investigations is dependent on contractor support which provides psychiatrists, personnel security review examiners, reporting and transcription services, and sundry personnel security clearance services. ($9,165)	The support services contract includes funds to provide limited support to field elements for implementation of cost-saving safeguards and security measures. This contract will provide limited safeguards and security technical, analytical, and administrative support which is required to allow the program to meet existing program issues and problems in addition to new activities associated with arms control and nonproliferation, weapon returns, and a post cold war environment. Also included in this contract support are security operations such as badging, fingerprinting, security briefings at HQ, etc. The contract cannot go below the current level of funding without negatively impacting the success of continued timely security investigations which are dependent on contractor support provided by psychiatrists, personnel security review examiners, reporting and transcription services, and sundry personnel security clearance services. ($7,695)	This is the third year of a five year support services contract that provides support to field elements for implementation of cost-saving safeguards and security measures. In addition, it provides safeguards and security technical, analytical, and administrative support that is required to allow the safeguards and security program to meet existing program issues and problems, new activities associated with arms control and nonproliferation, weapon returns, and a post cold war environment; and support for security operations such as badging, fingerprinting, security briefings at HQ, etc. The success of continued timely security investigations is dependent on this support service contract which provides psychiatrists, personnel security review examiners, reporting and transcription services, and sundry personnel security clearance services. ($8,587)
	The DOE HQ program of assistance to DOE operations offices in implementation of safeguards and security policy at existing facilities requires technical and engineering assistance which is made available primarily through such contractors as Battelle's Pacific Northwest Laboratory and the Westinghouse Hanford Co. at the Richland Operations Office, Washington, and the Westinghouse Idaho Nuclear Co. safeguards and security engineering organization at the Idaho National Engineering Laboratory, Idaho. This assistance includes technical assessments, vulnerability assessment	The Office of Safeguards and Security support for program assistance to DOE operations offices in implementation of safeguards and security policy at existing facilities requires technical and engineering assistance made available primarily through such contractors as Battelle's Pacific Northwest Laboratory and the Westinghouse Hanford Co. at the Richland Operations Office, Washington, and the Westinghouse Idaho Nuclear Company's safeguards and security engineering organization at the Idaho National Engineering Laboratory, Idaho. This assistance includes technical	The Office of Safeguards and Security support for program assistance to DOE operations offices in implementation of safeguards and security policy at existing facilities requires technical and engineering assistance made available primarily through such contractors as Battelle's Pacific Northwest Laboratory and the Westinghouse Hanford Co. at the Richland Operations Office, Washington, and the Westinghouse Idaho Nuclear Company's safeguards and security engineering organization at the Idaho National Engineering Laboratory, Idaho. This assistance includes technical

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Additional Support (Cont'd)	support, troubleshooting, technical assistance, surveys, performance testing, technical background on policy issues, and storage and consolidation issues. In addition, technical computer security support to conduct certification reviews of HQ computer systems, development of control system for classified information, review of national network computer security plans, guidelines, and support to the Computer Security Advisory and Steering Committee are conducted by Martin Marietta Energy Systems at Oak Ridge, Tennessee. Initiate and complete DOE Headquarters Rebadging activities. ($3,043)	assessments, vulnerability assessment support, troubleshooting, technical assistance, surveys, performance testing, technical background on policy issues, and storage and consolidation issues. In addition, technical computer security support to conduct certification reviews of HQ computer systems, development of control system for classified information, review of national network computer security plans, guidelines, and support to the Computer Security Advisory and Steering Committee are conducted by Martin Marietta Energy Systems at Oak Ridge, Tennessee. Provides for policy and technical computer and assistance to the Classified Technical and Operational Security Branch through DOE's Office of Information Technology. ($2,891)	assessments, vulnerability assessment support, troubleshooting, technical and engineering assistance, surveys, performance testing, technical background on policy issues, storage and consolidation issues, and arms control support. In addition, technical computer security support to conduct certification reviews of HQ computer systems, development of control system for classified information, review of national network computer security plans, guidelines, and support to the Computer Security Advisory and Steering Committee are conducted by Martin Marietta Energy Systems at Oak Ridge, Tennessee. Supply administrative and technical guidance in the development of computer security policy for classified systems. In addition, this activity provides maintenance of HQ protective force radio system, as well as conceptual and detailed engineering designs for access control improvements at HQ. ($3,208)
	Technical engineering and day-to-day operational support is provided by Westinghouse Idaho Nuclear Corporation (WINCO) for HQ physical protection systems. ($313)	Technical engineering and day-to-day operational support for HQ physical protection systems is provided by Westinghouse Idaho Nuclear Corporation (WINCO). ($313)	Technical engineering and day-to-day operational support for HQ physical protection systems is provided by Westinghouse Idaho Nuclear Corporation (WINCO). ($313)

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Additional Support (Cont'd)	Initiates aggressive modernization of the Safeguards and Security (S&S) management information system (Automated Office Support Systems (AOSS)/Automated Information System (AIS)). This modernization effort addresses, in part, discrepancies highlighted by the GAO in several audits. Provides AOSS/AIS support to Office of Security Affairs in the development of AIS tools to improve productivity and control of the safeguards and security overall program. Commences preliminary work on the implementation of a Local Area Network (LAN) to get management information system data from the mainframe computer to the desk top. Provide overall computer support to Security Affairs. ($900)	Performs data entry and software support for the Safeguards and Security Information Management System (SSIMS) and the Departmental Integrated Security System (DISS). Provides support for the Local Area Network (LAN). Provides Automated Office Support Systems (AOSS)/Automated Information System (AIS) support to the Office of Security Affairs in the development of AIS tools to improve productivity and control of the safeguards and security overall program. Provide overall computer support to Security Affairs. ($1,200)	Provides support to the Safeguards and Security Information Management System (SSIMS) that tracks and reports classified safeguards and security issues from all DOE field sites. Operates, maintains, and supports both the classified and unclassified Security Affairs Local Area Networks. Supports the development of improved productivity within the Office of Security Affairs by ensuring availability of all the workstations, upgrading both hardware and software to keep pace with the changing technology, and initiating automated workflow processes. Ensures that the necessary telecommunications equipment is available to support the requirements of the Office of Security Affairs. ($1,493)
	Provides for maintenance of the installed security alarm system at DOE HQ facilities with limited modifications to the current system. ($290)	Provides for maintenance of the installed security alarm system at DOE HQ facilities with limited modifications to the current system. ($350)	Provides for maintenance of the installed security alarm system at DOE HQ facilities with limited modifications to the current system. ($350)
	The Chicago Operations Office safeguards and security staff consists of 21 Federal FTE's located at the Operations Office. This Federal staff provides management direction, internal coordination, advice, assistance, and support to Chicago Program Managers, Area Office Managers, and Contracting Officers in the development and implementation of effective and efficient safeguards and security programs at the Chicago Operations Office. They conduct integrated safeguards and security surveys and nuclear materials management appraisals. They also develop and manage the Chicago Operations Office Personnel Security Clearance Program.	Organizationally, the Chicago Operations Office is responsible for these 21 FTE's; however, for now the funding is carried in this budget. The Chicago Operations Office safeguards and security staff consists of 21 Federal FTE's located at the Chicago Operations Office. This Federal staff provides management direction, internal coordination, advice, assistance, and support to Chicago Program Managers, Area Office Managers, and Contracting Officers in the development and implementation of effective and efficient safeguards and security programs at the Chicago Operations Office. They conduct integrated safeguards and security surveys and	Organizationally, the Chicago Operations Office is responsible for these 21 FTE's; however, for now the funding is carried in this budget. The Chicago Operations Office safeguards and security staff consists of 21 Federal FTE's located at the Chicago Operations Office. This Federal staff provides management direction, internal coordination, advice, assistance, and support to Chicago Program Managers, Area Office Managers, and Contracting Officers in the development and implementation of effective and efficient safeguards and security programs at the Chicago Operations Office. They conduct integrated safeguards and security surveys and

III. Safeguards and Security Operational Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Additional Support (Cont'd)	($1,503)	nuclear materials management appraisals. They also develop and manage the Chicago Operations Office Personnel Security Clearance Program. ($1,532)	nuclear materials management appraisals. They also develop and manage the Chicago Operations Office Personnel Security Clearance Program. ($1,532)
	21.0 FTE $ 15,214	21.0 FTE $ 13,981	21.0 FTE $ 15,483
Safeguards and Security Operational Support	66.0 FTE $ 41,875	66.0 FTE $ 40,468	66.0 FTE $ 40,350

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR SAFEGUARDS AND SECURITY

I.. Preface: Technology and Systems Development

The Technology and Systems Development program is customer driven to achieve key strategic developments geared towards cost savings, operational efficiencies, improved effectiveness of systems, and the prevention of duplication of efforts between other Government entities while meeting the security needs of DOE field elements. An integral part of this program is the technology transfer of the products of the program to U.S. industries to assure their technological standing in the world safeguards and security community.

Included in Technology and Systems Development are activities to develop state-of-the art technologies related to safeguarding DOE facilities, nuclear materials, weapons, and weapons components, and classified information. It involves the development and evaluation of new components and systems for physical security, materials control and accounting (MC&A), computer security, and personnel security. It also involves quality assurance programs, standardization, effectiveness evaluations, generic systems design, and systems integration. Program funding level will permit activities which address approximately 50 percent of customers needs.

II. A. Summary Table: Technology and Systems Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Science and Technology Base Development	$ 10,339	$ 10,536	$ 9,436	$ -1,100
Concept and Demonstrational Development	6,366	4,394	6,381	1,987
Full Scale Development	6,200	5,225	6,088	863
Total, Technology and Systems Development	$ 22,905	$ 20,155	$ 21,905	$ 1,750

II. B. Laboratory and Facility Funding Table: Technology and Systems Development

Argonne National Lab (West)	165	173	160	-13
Brookhaven National Lab	527	402	540	138
Lawrence Livermore National Lab	3,217	2,719	3,451	732
Los Alamos National Laboratory	7,040	6,023	7,336	1,313
Mound Plant	890	905	770	-135
Oak Ridge Operations Office	2,071	1,908	1,663	-245
Richland Operations Office	984	900	200	-700
Sandia National Laboratories	8,011	7,125	7,785	660
Total, Technology and Systems Development	$ 22,905	$ 20,155	$ 21,905	$ 1,750

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Technology and Systems Development			
Science and Technology Base Development	PHYSICAL SECURITY Based on specific user requirements, develop a physical security technology base capable of providing cost-effective, innovative physical security systems to protect the Department against increasingly sophisticated and wide-ranging threats against DOE safeguards and security interests. Physical security technologies are developed through technical expertise at the Sandia National Laboratories, Albuquerque (SNLA), New Mexico; Martin Marietta Energy Systems (MMES), Tennessee; and Brookhaven National Laboratory (BNL), New York. The physical security technology base also focuses on development of technologies that protect against the theft, loss, and proliferation of special nuclear materials (SNM), and that decrease personnel access and exposure to SNM. Automated technologies play a vital role.	PHYSICAL SECURITY Science and Technology Base phase of Technology and Systems Development includes the primary research program for the development of new state-of-the-art physical security systems. It allows key technology areas to be explored and developed if the principles and concepts prove to have merit. It focuses on providing technology to solve identified user requirements. Based on specific user requirements, develops a physical security technology base capable of providing cost-effective, innovative physical security systems to provide protection to the Department's safeguards and security interests. Physical security technologies are developed through technical expertise at the Sandia National Laboratories, Albuquerque (SNLA), New Mexico; Brookhaven National Laboratory (BNL), New York; and Martin Marietta Energy Systems (MMES), Tennessee. There is a wide range of threats developing as the departmental locations go through numerous transitions ranging from the return of weapons that need to be dismantled and placed in safe storage, to maintaining effective security during times of declining budgets. While the transitions create new potential threats, the threat of theft, loss, and proliferation of special nuclear material (SNM) and other security interests still remains. The physical security technology base focuses on development of technologies that decrease personnel access and exposure to SNM, validate access to	PHYSICAL SECURITY Protection of nuclear weapons, special nuclear materials (SNM), classified matter, and information is the primary objective of the Department of Energy's nuclear safeguards and security (S&S) program. The strength of the S&S program arises from the close interface between materials control and accountability (MC&A), computer security, and physical security activities. In addition to these traditional protection requirements, the changing DOE mission has raised new issues in the areas of returning weapons and facility dismantlement activities that have resulted in increased long term SNM storage requirements and unique protection and access control requirements. Further, international inspections by the International Atomic Energy Agency (IAEA) and treaty verification activities have also placed additional requirements on this program. The science and technology development phase provides for the basic research, applied research and experimental prototypes for new concepts and methodologies to address these expanding requirements. The physical security program develops detection, assessment, delay, access control, and response capabilities to protect DOE assets. Technology research and development in this area is sponsored at Sandia National Laboratories (SNLA), Albuquerque, New Mexico; and Martin Marietta Energy Systems (MMES), Oak Ridge, Tennessee.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)		security areas, and provide enhanced detection capabilities and systems automation.	
	The Sandia National Laboratories, Albuquerque, New Mexico, program includes the analysis of new principles and concepts to determine if further development would be beneficial and if they have potential application throughout the security community; evaluation of existing products to determine protection effectiveness; testing of system vulnerabilities; and the development of new ideas into proof-of-concept models to meet existing and anticipated vulnerabilities. The program's key elements include interior and exterior intrusion detection sensors and video systems to enhance threat detection and assessment; communications, display, and control systems for adequate and timely annunciation of existing detection and assessment systems; improvements to access delay systems in current use and accommodate new vault requirements resulting from special nuclear material consolidation efforts throughout the Department; and entry control system development to improve performance. Also included are explosive and contraband detection; advanced security concepts to ensure a continuing review of existing and emerging technology to provide vitality and cope with changing or newly emerging threats; applied image processing to reduce dependence on manual recognition and assessment of anomalies in the handling of critical assets for a more cost effective system; development of expertise in locks and security containers and	The Sandia National Laboratories, Albuquerque, Nex Mexico, program includes the analysis of new principles and concepts to determine if further development would provide potential benefits in physical security systems; evaluation of existing products to determine the protection effectiveness; providing a center of expertise in key technology areas that are capable of supporting numerous benefactors; determining system vulnerabilities and providing potential fixes; advances in state-of-the-art key technology areas; and developing proof-of-concept models to verify system capabilities. The program's key elements include interior and exterior intrusion detection sensors and video systems to enhance threat detection and assessment; and entry control system development to improve performance. Also included are explosive and contraband detection; advanced security concepts to ensure a continuing review of existing and emerging technologies necessary to address changing and emerging threats; development of expertise in locks and security containers and electronic tagging of high valued property to deter theft; applied image processing to reduce dependence and operational costs associated with manual recognition and assessment of anomalies in the handling of critical assets; and further development of an automated sensor testing system to reduce personnel exposure to hazardous environments and provide consistency of tests at reduced operational costs.	Sandia National Laboratories (SNLA), Albuquerque, New Mexico, is investigating various technologies to reduce the risk of unauthorized access to and within DOE facilities while also reducing lifecycle costs. In the area of interior and exterior sensors it will continue developing a biometric device to more accurately detect human presence and differentiate between humans and other life forms, begin commercialization of an advanced processor, and evaluate various commercially available sensors. Preliminary testing will begin on a developmental millimeter wave sensor which will provide enhanced detection over current systems because of its ability to penetrate fog, haze, fabrics, and other coverings. Work is also being performed on various access delay technologies, such as advanced activated dispensable materials to provide a non-toxic low-cost adversary delay alternative to permit increased security response time allowances. Automated technologies are being developed to reduce manpower requirements and provide effective and efficient access control to DOE facilities. SNLA will perform vulnerability testing of biometric identifiers, laboratory testing of optical turnstiles, and laboratory testing of radio frequency and infra-red remote portal controllers to determine the performance of these new commercial products. They will also develop and test a prototype property protection system that will be

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	electronic tagging of high valued property to deter theft; further development of an automated sensor testing system to reduce personnel exposure to hazardous environments and provide consistency of tests at reduced operational costs; and the insider protection program to detect and limit an insider's capability to tamper with security system electronics and participate in collusion with an outsider. This area has historically been an accepted risk due to lack of effective technology.		integrated with the entry control system to automatically detect unauthorized removal of high value items. Facial recognition technologies will be tested and evaluated to provide access control that is less vulnerable but more transparent to the user. A database will be established to track lifecycle cost of CCTV equipment used at DOE sites to determine where improvements can be made. A new security container that has automated inspection and access documentation features will be developed. A newly developed prototype explosives detection booth will be tested as part of an effort to reduce the risk of radiological sabotage through the introduction of explosives. In addition, commercially available explosives vapor detectors will be evaluated to determine performance limits. Testing and evaluation will be performed on a system that integrates advanced image processing technologies into a personnel and materials tracking system. This system will aid in the surveillance of special nuclear materials and personnel inside nuclear facilities to help protect against the insider threat, and provide greater external detection capability. SNLA will also explore advanced technologies which show promise for addressing major security problems or reducing operational costs to the DOE.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	At Martin Marietta Energy Systems (MMES), Tennessee, DOE is coordinating with the Department of Defense to test and type-classify frangible ammunition to meet operational, safety, and environmental requirements. Work was initiated on a field-ready diversionary device, and an enclosed space detection system.	At Martin Marietta Energy Systems (MMES), Tennessee, DOE is coordinating with the Department of Defense to test and type-classify frangible ammunition to meet operational, safety, and environmental requirements. Enhancements to the field-ready diversionary device will be made to make it withstand damage when used in an aqueous environment. The enclosed space detection system will be developed into a field-deployable prototype system for evlauation.	Activities are being conducted at Sandia National Laboratories (SNLA), Albuquerque, New Mexico; and Martin Marietta Energy Systems (MMES), Oak Ridge, Tennessee, to enhance protective forces with technology to meet future security requirements in a more cost effective manner. MMES has developed a non-lead frangible ammunition which will be transferred to the private sector to eliminate lead exposure to personnel and hazardous lead waste streams at firing ranges. Controlled stability shotgun projectiles are being developed to increase the effectiveness of DOE security forces and reduce the potential for collateral damages to personnel and sensitive equipment. MMES is also developing an automated technology to detect persons in enclosed vehicle spaces to eliminate requirements for manual vehicle searches and provide increased protection. SNLA will focus on defining operational surety needs and investigating technology areas to address these needs. SNLA will also develop an intelligent alarm processor to reduce the number of false alarms and optimize protective force utilization.
	At Brookhaven National Laboratory work was initiated on a low cost retractable vehicle barrier.	At BNL, activities will focus on further development of an activated cable barrier which does not require environmentally damaging fluids for its operation.	No activity.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	MATERIALS CONTROL & ACCOUNTING Materials control and accounting (MC&A) technologies are essential to provide effective and timely safeguards against the theft, loss, or proliferation of special nuclear material (SNM). These technologies were developed through technical expertise at Sandia National Laboratories, Albuquerque (SNLA), New Mexico; Los Alamos National Laboratory (LANL), New Mexico; Lawrence Livermore National Laboratory (LLNL), California; Ames Laboratory and Brookhaven National Laboratory (BNL), New York; Mound Facility, Ohio; and Argonne National Laboratory-West (ANL-W), Idaho. Emphasis is placed on SNM loss and/or anomaly detection to help address an increased insider threat associated with facilities being decommissioned, further development of tools that allow for DOE order and general performance requirements and criteria to be met, and on identifying advanced methods of safeguarding the existing, transitional, and future nuclear weapons complex. Efforts concentrated on improved materials accountability technologies that help reduce inventory differences and shipper/receiver differences in order to maximize loss-detection sensitivities and provide assurance of adequate controls on nuclear materials. The application of these new technologies is an essential element in meeting national weapons reduction goals and consolidation of the DOE weapons complex.	MATERIALS CONTROL & ACCOUNTING Materials control and accounting (MC&A) technologies, including instrumentation and advanced software, are essential to provide effective and timely safeguards against the theft, loss, or proliferation of special nuclear material (SNM). These technologies will be developed through technical expertise at Sandia National Laboratories, Albuquerque (SNLA), New Mexico; Los Alamos National Laboratory (LANL), New Mexico; Lawrence Livermore National Laboratory (LLNL), California; Brookhaven National Laboratory (BNL), New York; Mound Facility, Ohio; Argonne National Laboratory-West (ANL-W), Idaho; Argonne National Laboratory-East (ANL-E), Illinois; and Martin Marrietta Energy Systems (MMES), Tennessee. Emphasis is placed on SNM loss and/or anomaly detection to help address an increased insider threat associated with facilities being decommissioned, and further development of tools that allow DOE order and general performance requirements and criteria to be met. Efforts will concentrate on improved materials accountability technologies that help reduce inventory differences and shipper/receiver differences in order to maximize loss-detection sensitivities and provide assurance of adequate controls on nuclear materials. The application of these new technologies is an essential element in meeting national weapons reduction goals and consolidation of the DOE weapons complex. Development of advanced materials accounting systems will improve nuclear material tracking, management, and inventory evaluation capabilities.	MATERIALS CONTROL & ACCOUNTING The development of technologies, approaches and concepts that allow for the effective implementation of MC&A is important to the Department's nuclear S&S program. These technologies and concepts will: (1) provide systems that can monitor the movement and detect tampering of nuclear materials and can provide information on type and quantity of these materials in a wide variety of matrices and forms are important for not only detecting unauthorized activities regarding these materials but providing assurance that these materials are in authorized locations; (2) develop latest-generation computerized materials accounting systems which provide real time information on material attributes, specific quantities and locations; (3) develop remote sensing technologies that can extend the use of materials measurement and control systems into areas where environmental and radiation exposure conditions preclude frequent access; (4) increase capabilities to identify and respond to unauthorized activity involving nuclear materials through the integration of MC&A and physical security systems; (5) develop required evaluation tools that can detect anomalies (such as material losses) and trends; and (6) conduct and continuously update training to facilitate the transfer of these technologies to the user community. Material control and accountability activities are sponsored at Argonne National Laboratory - East (ANL-E), Illinois; Argonne National Laboratory - West (ANL-W), Idaho; Brookhaven National Laboratory (BNL), New York;

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)			Los Alamos National Laboratory (LANL), New Mexico; Lawrence Livermore National Laboratory (LLNL), California; Martin Marietta Energy Systems (MMES) - Oak Ridge, Tennessee; Mound facility, Ohio; Pacific Northwest Laboratory (PNL), Washington; and Sandia National Laboratory, New Mexico.
	The materials control and accounting (MC&A) program at Los Alamos National Laboratory, New Mexico, supports existing facilities, weapons return, and facility transition activities. The base program stresses the development of the fundamental physics in nondestructive assay (NDA), gamma ray and neutron technology, and chemical and isotopic analysis for integration and support to MC&A subsystems that ultimately contribute to timely and effective safeguards to meet DOE order and general performance requirements and criteria. Base activities also include further development of technologies to monitor movement of special nuclear material (SNM) packages being transported between locations within facilities and SNM being placed in storage in support of facility transition and weapons reduction initiatives. Emphasis was placed on technology development for holdup, confirmatory, and inventory verification measurement in support of facilities being decommissioned and the materials and waste recovered in the process; enhancement of detection/surveillance capabilities related to SNM in storage or being transported; providing the technical basis for conceptual designs, cost and feasibility studies for safeguards and security in a changing environment;	The materials control and accounting program at Los Alamos National laboratory, New Mexico, will support existing facilities, weapons return, and facility transition activities. The base program will include development of the fundamental physics in nondestructive assay (NDA), gamma ray, and neutron technology that ultimately contribute to timely and effective safeguards to meet DOE order and general performance requirements and criteria. Base activities also include development of radiation-detection-based technologies to monitor and detect special nuclear material (SNM) packages being transported between locations and SNM placed in storage, and further development of technology for materials accountability, extending verification periods and continuous monitoring of SNM inventories in storage. Emphasis will be placed on technology development for holdup, confirmatory, and inventory verification measurement in support of safeguards at facilities undergoing decontamination and decommissioning activities related to recovery of solutions in dormant process lines. The program will support limited development of improved measurement verification capabilities including assaying SNM content in a variety of complex material forms and	Weapons dismantlement, facility decontamination and decommissioning, and material consolidation activities have created requirements such as the ability to increase the amount of measured special nuclear material (SNM) inventory in storage, provide more rapid and cost effective materials control and accounting (MC&A) of SNM in DOE facilities, methodologies to reduce nondestructive assay (NDA) measurement operator error, technologies to reduce diversion threats via improved measurement capability, technologies to reduce personnel radiation exposure, and methodologies to safely secure nuclear materials in long-term storage. To aid in developing more accurate and timely measurements, LANL will focus on standardizing NDA equipment through the evaluation of commercially available equipment and working with private industry to enhance their offerings for NDA applications; and investigating the applicability of the active neutron multiplicity technique to highly enriched uranium (HEU) inventory verification at DOE facilities. The following activities provide rapid and cost effective receipt verification measurements: complete the upgrade of the high efficiency neutron counter and begin reference measurements; develop new software packages for neutron coincidence counting; develop

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	additional development of improved measurement capabilities including assaying SNM content in a variety of complex material forms and compositions to continuously improve safeguards verification efforts; further development of technology for materials accountability and continuous monitoring of SNM inventories in storage; seeking new ways to quantify SNM content of waste and other material forms generated during decontamination and decommissioning and of solutions which are contained in dormant process lines; providing technology development in support of chemical operations; improving automated MC&A databases as well as computer simulation technologies to provide real-time information on status of SNM holdings; developing tools for understanding vulnerabilities, performing risk/consequence analysis, and determining cost/benefit analysis of upgrades and system improvements; and further improvement of software/operational technology to support use of SNM assay systems for a wide variety of SNM forms and types of safeguards interests in a reconfigured complex, and to protect information concerning SNM quantities and locations.	compositions. Evaluation of the effectiveness of commercial software tools for modelling clean-out and limited production activities and performing risk/consequence analysis, and determining cost/benefit of upgrades and system improvements will occur; and further improvements of software and operational technology to support use of SNM assay systems will be performed. The testing and evaluation of advanced instrumentation for detecting hidden nuclear materials or confirming the presence of nuclear materials will be extended to a multi-year effort. This activity is an essential part of reconfiguration/ dismantlement activities where materials are being moved from site-to-site between storage areas. Work on developing smaller, more efficient NDA detectors will be done as resources allow.	measurement capabilities for materials for which no measurement technique has been available, such as weapons assemblies, weapons components, and related process materials; develop a technique to improve waste and residue assays using californium shufflers by correcting for the position of the uranium within a moderating matrix; and complete testing, evaluating and technology transfer of the prototype segmented add-a-source system. To provide more rapid and cost-effective measurement of plutonium in waste drums and other bulk containers, LANL will: complete combined neutron/gamma-ray measurement program on residue, scrap, and waste samples using shielded cells to improve measurement capabilities; deliver an end-user Acoustic Resonance Spectroscopy (ARS) intrinsic seals system to provide a rapid confirmatory measurement in physical inventories; conduct a field test using ARS technology to assess whether it can be used to provide limited quantitative information regarding holdup; and complete the integration of neutron and gamma-ray measurements for nuclide inventory analysis for the nondestructive assay of scrap, waste, and residue materials. To reduce facility risk by demonstrating the ability to detect diversion scenarios, LANL will: deliver an automated verification computer code to detect anomalous measurement, shipper/receiver, or inventory difference data, thus improving the capabilities for preventing both abrupt and protracted diversion; develop advanced chemical assay technologies to enhance precision and reduce environmental impact; and develop an integrated assay capability for accountability measurements of

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)			previously unmeasured inventory in 30 and 55-gallon drum shipping containers. The following technology will provide a potential closure solution on previously unmeasured inventories; develop a technology to determine the amount of hold-up and in-process inventory that is accounted for on a real-time basis, without expensive shutdown and cleanout operations; develop a vault measurement procedure that does not require handling of sample containers, but rather identifies and verifies them in place; perform experiments on a new combined thermal/epithermal neutron instrument to determine its capabilities to detect concealed SNM in waste drums and develop techniques to improve performance; develop a video monitoring system capable of monitoring a specific target and generating an alarm and/or transmitting video surveillance data on event detection; and transfer the windows-tomographic gamma scanner software to industry to provide greater certainty in measurements.
	No activity.	No activity.	LANL will also complete a core local area network material accounting system which will provide a DOE materials accounting system with common characteristics. Data analysis software to detect material losses and identify contributors to inventory differences will be developed and integrated into this accounting system. Artificial intelligence technologies to detect error and anomalies will be investigated for future application of integrated safeguards systems.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	The materials control and accounting (MC&A) program at Lawrence Livermore National Laboratory, California, focuses on advancements in nondestructive assay MC&A measurement technology for more accurate and timely special nuclear material (SNM) measurement technologies for materials in various forms throughout the DOE complex.	The materials control and accounting program at Lawrence Livermore National Laboratory (LLNL), California, develops advanced, nondestructive assay (NDA) technology for measurement of special nuclear material. Development also includes robotic NDA systems for application at storage and processing facilities. LLNL efforts are directed at improving the useability, performance, adaptability, and automation of NDA systems for nuclear safeguards. These efforts will also have extended developmental schedules.	At Lawrence Livermore National Laboratory (LLNL), California, they will develop enhanced NDA techniques directed at major and significant MC&A problems associated with heterogeneous and shielded materials, lump corrections, holdup, waste, and shipper/receiver differences. They will also focus on development of NDA systems to provide real time accounting information.
	The materials control and accounting program at Sandia National Laboratories, Albuquerque, New Mexico, focuses on further improvements in the use of seals, tamper-indicating devices and other material control technologies in preparation for returning weapons, increased special nuclear material (SNM) storage, and seal utilization in support of SNM assurance requirements. This technology reduces the burden of materials accountability at locations where SNM is being stored and is inaccessible, and is an important step in creating greater efficiency and a safer workplace across the DOE complex by reducing current reliance on manpower-intensive materials accountability.	The materials control and accounting program at Sandia National Laboratories, Albuquerque, New Mexico, focuses on further improvements in the use of seals, surveillance, item monitoring, tamper-indicating devices and other material control technologies for special nuclear material (SNM) in returned weapons and storage. This technology reduces the burden of materials accountability at locations where SNM is being stored and is inaccessible, and is an important step in creating greater efficiency and a safer workplace across the DOE complex by reducing current reliance on manpower-intensive materials accountability.	Sandia National Laboratories (SNL), Albuquerque, New Mexico, will concentrate on material control technologies to extend the frequency of physical inventories, thus reducing personnel exposure and operational costs. SNL will test and evaluate new safeguards seals to procure a system that addresses the requirements of the DOE complex. They will also complete the prototype of a wireless canister monitoring system which will remove all electronics from materials control systems in high radiation areas and reduce the need for personnel to enter these areas to replace components, thus reducing radiation exposure. The canister monitoring system will be integrated into a personnel and material tracking system to provide enhanced material protection and cost savings. The development of new integrated systems to provide enhanced capabilities to address the insider threat at reduced costs will also be performed at SNL. A real time personnel tracking tag will be developed using commercially available sources and an attribute measuring

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)			sensor will be added to a materials control device.
	The materials control and accounting program at Mound Facility, Ohio, concentrates on enhancing calorimetric assay technology to improve calorimetry measurement capabilities by hastening the analysis time and extending calorimetric assay to material types expected to prevail in special nuclear material storage locations and in a reconfigured complex.	The materials control and accounting program at Mound Facility, Ohio, concentrates on maintaining currently available calorimetric assay technology and methods for special nuclear material in storage. The calorimetry measurement evaluation program at Mound will provide enhanced techniques for conducting tritium measurements.	Activities at Mound Facility, Ohio, will focus on developing advanced calorimetric instrumentation and measurement techniques to extend calorimetric assay to new material categories and reduce calorimeter assay time. They will complete the testing of a high wattage calorimeter and testing of a glove box compatible air-bath calorimeter.
	The materials control and accounting program at Brookhaven National Laboratory, New York, includes progress in the development of remote sensing access control technology for monitoring special nuclear material (SNM). Development was initiated for an SNM gamma-ray finger print monitor capable of measuring intrinsic properties of specific SNM items for increased assurance against theft.	The materials control and accounting program at Brookhaven National Laboratory, New York, includes progress in the development of remote sensing access control technology for monitoring special nuclear material (SNM). Other technology development includes a prototype xenon gamma-ray spectrometer for in-place SNM item monitoring, confirmatory and waste characterization measurements.	To help address MC&A requirements, Brookhaven National Laboratory (BNL), New York, will field test a prototype SNM fingerprint monitor to perform accurate and rapid confirmatory measurements of SNM in storage and to detect unauthorized removal of SNM. They will also test an integrated xenon gamma-ray spectrometer to provide improved capabilities of in-place monitoring and confirmatory and waste characterization measurements. BNL will complete construction of an access-by-remote sensing system that will fulfill treaty requirements by providing assurance of materials in storage at DOE facilities.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	COMPUTER SECURITY Emphasis is placed on preventing unauthorized intrusions into computer systems, prevention of data corruption or computer disablement, preparing information security education, and developing automated monitoring techniques. The primary threats come from the adversarial insider or personnel with malicious intent (disgruntled employees, etc). Other threats come from increasingly sophisticated hackers and from international economic and technological espionage. Accordingly, information continues to be a primary target for our adversaries. Furthermore, information systems are targeted by hackers and personnel with malicious codes (e.g., viruses like the Michelangelo Virus, Worms similar to the Morris Worm, etc).	COMPUTER SECURITY Emphasis is placed on an independent verification and validation (IV&V) effort and the evaluation of multilevel products for use in creating partitions in networks and determining how to economically perform security acceptance tests. The primary threats come from the adversarial insider or personnel with malicious intent (hackers, disgruntled employees, etc). Information continues to be a primary target for our adversaries. Information systems are also targeted by hackers and personnel with malicious codes.	COMPUTER SECURITY The computer security program will focus on developing the technology required to allow single terminal access to the information customers require, regardless of its sensitivity, while providing appropriate (yet transparent) protection for all DOE information assets. Successful development and implementation of appropriate program products will reduce the frequency, impact, and consequences of information system intrusions, even as their potential may increase. Planned efforts include increased information system security automation, replacing (where appropriate) current time and resource intensive procedures. Additionally, they will support efforts to reduce duplication of information system hardware through multilevel system security initiatives.
	Rapidly changing technology continues to be one of the most formidable challenges that we face. Coupling this change with the enormous growth (35% per year) in the use of computers and computing services requires that computer security continuously evolve simply to keep pace. The Departmental strategy remains four fold, with the emphases on EDUCATION in the computer security arts, the development of CERTIFICATION tools, VULNERABILITY ANALYSIS, and AUDITING of the network's security health. The Science and Technology Base Development effort concentrates on the Certification and Auditing aspect of the strategy using the technical expertise at Lawrence Livermore National Laboratory (LLNL), California; Los Alamos National	The greatest challenges that are faced by Automated Information Systems (AIS) Security continue to be the rapidly changing technology and the enormous growth (35% per year) that we are experiencing in the use of AIS and AIS services. The Departmental strategy continues to be four fold with the emphasis on EDUCATION for the AIS security professional in the computer security arts, the development of CERTIFICATION tools, VULNERABILITY ANALYSIS, and AUDITING of the network's security health. The Science and Technology Base Development effort will concentrate on the Certification and Auditing aspect of the strategy using the technical expertise at Lawrence Livermore National Laboratory (LLNL), California; Sandia National	Activities in the science and technology base are performed at Lawrence Livermore National Laboratory (LLNL), Martin Marietta Energy Systems - Oak Ridge (MMES), and Los Alamos National Laboratory (LANL). This portion of the program is responsive to issues such as the increasing potential for large-scale compromise due to escalating inter-connectivity, greater system distribution and complexity, the use of new technologies, and greatly increased processing power and availability. At LLNL, efforts will be concentrated in the following areas: delivery of a documented and operational network intrusion detection software tool for real-time use on a network; development of technology to provide the ability to

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	Laboratory (LANL), New Mexico; Sandia National Laboratories (SNL), New Mexico; and Oak Ridge National Laboratory (ORNL), Tennessee.	Laboratories, Albuquerque (SNLA), New Mexico; and Martin Marietta Energy Systems (MMES), Tennessee, to develop the tools to support these themes as outlined below:	conduct multi-host inspections across a heterogenous network of UNIX and virtual memory system (VMS) systems from a single UNIX or VMS command client system; research into contemporary systems and network security issues; producing a vulnerability database for compiling, organizing, and employing information such as system exploitation methods, specific operation systems or networks affected, the source(s) of the vulnerability information, efforts to confirm the vulnerability, and any known fixes or protection procedures related to the problem; releasing binary inspection tools to assist with ensuring the integrity of system software and preventing the introduction of malicious software; and investigating the security impact of emerging technologies, such as massively parallel systems, client/server environments, distributed databases, wireless communications, etc.
	CERTIFICATION: Oak Ridge National Laboratory is investigating countermeasures for database vulnerabilities and is developing validation methodologies for each countermeasure. Current and emerging technology could provide the means to significantly enhance the safety and integrity of DOE data management environments. They are also analyzing commercially available hardware and software for use in developing prototype multi-level secure networks and in support of independent validation and verification teams.	CERTIFICATION: The independent verification and validation (IV&V) effort begins to deploy experienced teams to perform independent validations and verifications and train site personnel in their use. This resource is necessary to support the National Industrial Security Program (NISP)/Complex 21 environment. This year we further evaluate multilevel products for use in creating partitions in networks and determining how to economically perform security acceptance tests. LLNL activities include the development of verification requirements for compartmented and multi-level networks complimented by a	Computer systems today rely heavily on auditing mechanisms for detecting unauthorized activities on a system. However, the amount of data generated from auditing or monitoring is far too voluminous to adequately analyze manually. Much better use of system resources and the system manager's time is required. Tripwires and alarm systems should be employed to compliment present auditing efforts. Efforts at LLNL and LANL will identify where and what type of tripwires can be effective in policing a network.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)		vulnerability database to assist in the verification effort. At MMES, the investigation of countermeasures for database vulnerabilities and the development of validation methodologies for each countermeasure continues, performing analysis of hardware and software to be used for multilevel networks and looking at product support tools for the IV&V teams. At SNLA, software review methodologies are being developed.	
	DETECTION AND AUDIT: Rapidly and continuously changing technology demands that intrusion detection tools evolve accordingly in order to provide active defense against network intruders. Audit strategy is supported by the Lawrence Livermore National Laboratory (LLNL) upgrading of the network security monitor into a real-time intrusion detection tool capable of functioning on various platforms and within networks using differing protocols. Another tool being developed at LLNL will produce active mapping of network topology to provide a proactive detection of insider based threats. Since today's audit systems are generally not designed for use in distributed heterogeneous systems, LLNL is designing audit protocol standards to provide this capability. Also being developed at LLNL is an automated tool to identify classified information on an unclassified computer or network, a project to combine SPI/Unix and SPI/VMS products into a new, single distributed architecture able to support multi-host computer security inspections, and methods to be used for prevention, detection, and mitigation of computer	DETECTION AND AUDIT: The audit strategy is supported by the development of tools for the audit systems that allow for active mapping of the network topology to provide a proactive detection of insider threat. LLNL will be developing this mapping methodology. The development of the Joint Air Force and DOE SPI-UNIX/VMS tool at LLNL will be significantly delayed.	At MMES, a multilevel information system, using secured workstations that will support mixed clearance level sharing of computer resources, and thus significantly reduce financial resources required for redundant hardware and operations is being developed. In addition, MMES will implement a prototype distributed multilevel, trusted data management environment using commercially available products and NSA Multilevel information system security initiative (MISSI) products.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Science and Technology Base Development (Cont'd)	viruses and other malicious code. Los Alamos National Laboratory is coordinating the process of integrating the LLNL Text Analysis Project System and the EG&G File Transfer System into existing networks. Sandia National Laboratories efforts are focused on developing a computer system capable of secure unattended processing of classified information.		
	$ 10,339	$ 10,536	$ 9,436
Concept and Demonstrational Development	PHYSICAL SECURITY This level of development provides a systematic application of proven technologies to specific safeguards and security requirements identified at transitional sites. Included is the integration/application of prototypes and processes to address specific problems which are currently recognized and are expected to be of increased importance as more weapons are returned. The Sandia National Laboratories, Albuquerque (SNLA), New Mexico, program additionally focuses on development of standardized test procedures to improve the quality and consistency of protection systems throughout the Department; standardization of security systems and individual subcomponents through preparation of minimum performance specifications; and development of a functional requirements document for an integrated alarm annunciation and access control system. Other activities at SNLA include investigation and evaluation of modular vault designs for the storage	PHYSICAL SECURITY This level of development provides a systematic application of proven technologies to specific safeguards and security requirements identified at transitional sites. Included is the integration/application of prototypes and processes to address specific problems which are currently recognized and are expected to be of increased importance as more weapons are returned. The Sandia National Laboratories, Albuquerque (SNLA), New Mexico, program additionally focuses on standardization of physical security systems and individual subcomponents through preparation of minimum performance specifications. Other activities include investigation and evaluation of modular vault designs for the storage of SNM from the dismantled weapons; development of a low cost system which allows assessment of remote areas without installing cable; support for the new badge initiative; and development of probability of detection numbers for exterior intrusion	PHYSICAL SECURITY This level of development provides a systematic application of proven technologies to specific safeguards and security requirements identified at transitional sites. Included is the integration/application of prototypes and processes to address specific problems which are currently recognized and are expected to be of increased importance as more weapons are returned. The development of standardized components and systems is needed to ensure effective safeguards technologies and reduce lifecycle costs. Sandia National Laboratories (SNLA), Albuquerque, New Mexico, is developing standards for physical security systems and will transfer them throughout the DOE complex. Standardized testing procedures for security equipment throughout the complex are being developed to establish consistent minimum levels of performance, and eliminate the duplication of test procedure development at each site. SNLA will

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III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Concept and Demonstrational Development (Cont'd)	of SNM from the dismantled weapons; development of a low cost system which allows assessment of remote areas without installing cable; support for the new badge initiative; development of probability of detection numbers for exterior intrusion detection system; engineering development of a laser radar detection and assessment system; and standards development for a bulk explosives detection system. Development of an automated physical security and visitor access control system to reduce operational costs is underway at Lawrence Livermore National Laboratory (LLNL), California.	detection system. Supports limited efforts in standardizing test procedures of security equipment which are performed according to an extended schedule. Development of an automated physical security and visitor access control system to reduce operational costs continues at Lawrence Livermore National Laboratory (LLNL), California.	also design and construct a demonstration of identified sensors for protection of areas above suspended ceilings, under raised floors, and within air ducts and plenums for which no acceptable protection scheme exists. SNLA will complete the engineering development of advanced pyrotechnic smoke hardware that complies with safety requirements to increase delay and thus response time allowance. In addition, they will develop tools to automatically test, assess, and augment detection sensors located in hazardous areas without personnel involvement to reduce personnel radiation exposure and continue to assure that the sensors are properly working. The testing of a software package to automate the documentation of test results for exterior sensors will be completed. This will standardize testing procedures throughout the complex and support more consistent auditing of security effectiveness. To respond to increased long-term storage requirements, SNLA will conduct on-site testing and evaluation of modular vaults to determine their feasibility. The evaluation of prototype contraband detection systems will continue at a DOE site to determine performance limits and establish common procurement guidelines. To improve intrusion detection performance and cost effectiveness SNLA has developed a laser radar imaging system that provides a first order of assessment in addition to adversary detection. The system will be tested at a DOE site. SNLA will evaluate the latest technologies in badging systems and components to determine the appropriate badges to be incorporated at each site to ensure complex-wide consistency and compatibility. SNLA will evaluate

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Concept and Demonstrational Development (Cont'd)			commercially available integrated alarm and entry control systems and perform or recommend engineering modifications to address the needs of the DOE complex. Long-term storage requirements continue to increase due to weapons dismantlement activities and facility decontamination and decommissioning, leading to a need for an integrated physical protection, insider protection, and materials control and accountability system, to reduce operating costs, minimize radiation exposure, and ensure the integrity of special nuclear material in storage. SNLA has developed a personnel and material tracking system which will be updated to use video to perform both personnel tracking and material monitoring to help address this issue. At Lawrence Livermore National Laboratories (LLNL), California, an operational demonstration will be conducted of a standardized automated access control system capable of screening individuals for proper clearances prior to granting access to critical areas. This computerized system will authenticate visitors with speed, accuracy, and thoroughness. LLNL will also be working with its cooperative reasearch and development agreement (CRADA) partner to develop a downsized security system that will provide enhanced capabilities at lower operating costs. Efforts will also focus on standardizing this system so that it can be implemented throughout the complex.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Concept and Demonstrational Development (Cont'd)	MATERIALS CONTROL & ACCOUNTING Activities at Los Alamos National Laboratory (LANL), New Mexico, include development of specifications and conceptual designs for integrated material control and accounting (MC&A), process monitoring, and materials management and safeguards systems. Continue MC&A technology initiatives to computerize process flows and measurement points, personnel and material tracking systems, and integrated safeguards systems. Identify and demonstrate confirmatory and verification measurement methods at facilities. Integrate image data with other MC&A databases. Adapt isotopic codes to mobile/computer applications for at-line verification of nuclear material. Develop methodologies for designing safeguards systems that integrate material control, material accounting, physical protection, and operational activities. Complete distributed accounting system development. Provide engineering development of maturing nondestructive assay technologies. Demonstrate application of advanced materials accountability methods and software to improve measurement control, and assist in inventory difference analysis and anomaly evaluation. Finalize generic simulation modeling for facilities requiring changes to their processing system.	MATERIALS CONTROL & ACCOUNTING Activities at Los Alamos National Laboratory (LANL), New Mexico, include development of functional requirements for an integrated material control and accounting (MC&A) and personnel and material tracking system and integrated safeguards systems. Identify and demonstrate confirmatory and verification measurement methods at facilities. Integrate image data with other MC&A databases for anomaly detection, evaluation and resolution. Evaluate design methodologies for integrating material control, material accounting, physical protection, and operational activities. Demonstrate application of advanced materials accountability methods and software to improve measurement control, and assist in inventory difference analysis and anomaly detection and evaluation. Subprojects in measurement control and calibration of instrumentation and standards to ensure that accurate values are obtained for materials stored in inventory or being transferred during reconfiguration will be performed as resources allow. Limited testing of digital imaging research that reduces the need for human access to critical items, thus saving security costs and reducing personnel radiation exposure, will be performed and the development schedule extended. Complete and document, in its current form, computer software that simulates processes and systems used in safeguards. Perform on a limited basis the demonstration of measurement technologies in actual processing and storage facilities to test research concepts. Perform limited testing of several	MATERIALS CONTROL & ACCOUNTING Activities at Los Alamos National Laboratory (LANL), New Mexico, include integrating NDA measurement capabilities into a glovebox to later provide an automated weapons dismantlement system. The automation of this process will reduce risk of diversion and will be less manpower intensive. A software code to perform isotopic analysis methods applicable to shielded samples, which are becoming more frequent as the weapons complex downsizes, will be developed. LANL will test and evaluate an integrated segmented gamma scanner/Isotopic analysis software package on waste drum measurement system. This is a potential solution to a category of waste-related accountability measurements on new material, and contributes to a solution of safeguards termination on waste. An integrated holdup measurement system to improve the amount of accounted for inventory at a faster rate and requiring less manpower will be evaluated. LANL will provide a single analysis method for assay of input, product, and waste solutions via a Hybrid K-edge/Densitometer technique. A uranium shipper/receiver confirmatory system which provides radiation-based fingerprint measurements for uranium in shipping containers will be developed. This system will demonstrate that items containing SNM have not changed. The Tomographic Scanner, which provides improved accountability measurements of medium-density, heterogenous samples will be updated to an object-based software implementation to simplify technology transfer.

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III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Concept and Demonstrational Development (Cont'd)		nondestructive assay and anomaly detection and risk-analysis software evaluation systems.	
	At Lawrence Livermore National Laboratory (LLNL), California, provide engineering development of an emission/transmission computer axial tomography system for determining the special nuclear material (SNM) content in waste, packages, and heterogeneous materials found throughout the complex; and further development of techniques for Monte Carlo calculations of gamma ray spectra which are difficult to analyze in order to better qualify and account for SNM.	At Lawrence Livermore National Laboratory (LLNL), California, work focusing on research and development related to x- and gamma-ray spectrometry techniques, coupled with computerized tomography, and to the development of Monte Carlo computer simulation codes for interpreting the spectral data obtained by these techniques is extended to a multi-year effort. Techniques which are addressed by the LLNL program are designed to resolve problems associated with holdup, heterogeneous materials, lump corrections, scrap and waste measurements, and shipper-receiver measurements.	Activities at Lawrence Livermore National Laboratory (LLNL), California, will focus on developing techniques to secure nuclear materials accounting databases in order to prevent the manipulation of data pertaining to the location and quantity of nuclear materials. A library of Monte Carlo simulated SNM spectra for use in calculational standards and an instruction manual for Monte Carlo calculation of reference spectra will be made available to the DOE community. LLNL will also complete a preliminary design of a computed tomography system intended for the MC&A of difficult-to-measure materials.
	No activity.	No activity.	At Sandia National Laboratories, Albuquerque (SNL), New Mexico, they will standardize the methodology for sabotage target identification and analysis and associated security requirements. This will reduce unnecessary security upgrades and associated costs to meet radiological sabotage threats. SNL will also complete software packages that will address sabotage identification and target vulnerabilities at large, complex systems, such as nuclear reactors.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Concept and Demonstrational Development (Cont'd)	No activity.	No activity.	Efforts at Mound Facility (MD), Ohio, will include the development of instrumentation and measurement techniques to improve calorimetric assay as a safeguards tool. The results of a field test to use gamma-imaging device as a fingerprinting tool will be completed as well as the testing of a computer program to automatically create control charts to verify calorimeter operations. MD will also concentrate on the development of NDA standards for difficult-to-measure materials obtained during the dismantlement of weapon components.
	$ 6,366	$ 4,394	$ 6,381
Full Scale Development	PHYSICAL SECURITY Focus is on implementation of technologies that are maturing through onsite test and evaluation, training, manuals and documentation, and by developing commercial sources. Sandia National Laboratories, Albuquerque (SNLA), New Mexico, activities include reduced efforts in safeguards technology training development; technical support of the physical security module of a vulnerability assessment tool; demonstration of safeguards system integration and evaluation; DOE-wide support and training; and integrated safeguards testing and evaluation. This includes development of workshops, manuals, and documentation.	PHYSICAL SECURITY Focus is on implementation of technologies that are maturing through onsite test and evaluation, training, manuals and documentation, and by developing commercial sources. Sandia National Laboratories, Albuquerque (SNLA), New Mexico, activities include demonstration of safeguards system integration and evaluation and general DOE-wide support in many areas of technical expertise and training. This includes development of workshops, manuals, and documentation.	PHYSICAL SECURITY Focus is on implementation of technologies that are maturing through onsite test and evaluation, training, manuals and documentation, and by developing commercial sources. Sandia National Laboratories (SNLA), Albuquerque, New Mexico, will test and evaluate an enhanced personnel tracking and material control system that can be integrated with existing facility safeguards, security, safety, and operational systems. This system will provide DOE with greater protection, reduce radiation exposure to personnel, and reduce operational costs. OSS-developed technologies will be transferred to DOE and its contractors, other federal agencies, and private industry through technology exchanges, site visits, workshops, and various training classes to optimize the

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)			effectiveness of the technology development program.
	Martin Marietta Energy Systems (MMES), Tennessee, activities include technology transfer of an ORNL-developed tandem mass spectrometry system for explosives detection.	No activity.	No activity.
	MATERIALS CONTROL & ACCOUNTING	MATERIALS CONTROL & ACCOUNTING	MATERIALS CONTROL & ACCOUNTING
	Materials Control and Accounting (MC&A) activities at Los Alamos National Laboratory (LANL), New Mexico, focuses on the upgrading, demonstration, commercialization, exchange, and implementation of MC&A technologies developed within this program; and development of technical MC&A training to ensure the transfer of MC&A systems expertise to the facilities and to ensure a well-trained and qualified safeguards workforce; development of MC&A application guides which assist in the transfer of newly developed technologies; additional MC&A courses and training development; fielding of NDA technologies developed under the base program to assure commercial supplies of technologies which can make more systems available to facility operators; and enhancement of measurement capabilities and measurement control activities. Transfer to DOE facilities the principles for designing safeguards systems that meet performance and compliance requirements of DOE MC&A orders.	Activities at Los Alamos National Laboratory (LANL), New Mexico, include the transfer of the expertise of Materials Control and Accounting (MC&A) systems to the facilities to ensure a well-trained and qualified safeguards workforce; development of MC&A application guides which assist in the transfer of newly developed technologies; development of MC&A courses and training; fielding of NDA technologies developed under base program to assure commercial supplies of technologies which can make more systems available to facility operators; and enhancement of measurement capabilities and measurement control activities. The schedule for transferring the principles for designing safeguards systems that meet performance and compliance requirements of DOE MC&A orders to DOE facilities is extended over several years. Provide limited documentation of completed projects to ensure completed implementation of research results.	Activities to transfer DOE-developed technologies are an important aspect of the DOE safeguards and security (S&S) technology development program. Technology transfer supports guidance, assistance, and training to assure that technology developed through the DOE S&S program is successfully implemented at DOE sites. Activities at Los Alamos National Laboratory (LANL), New Mexico, include providing a focal point for the transfer of integrated safeguards technologies to DOE processing, dismantlement, and storage facilities. LANL will also focus on transferring information to improve radiation-detection-based materials control technology used for confirming or verifying nuclear materials at DOE nuclear facilities; transferring an image processing-based surveillance system to private industry which will help reduce physical inventory frequency for nuclear material in process or storage at DOE facilities; and providing assistance to sites on the design, implementation, testing, and documentation for site-specific local area network material accounting systems. In addition, LANL will develop advanced measurements training to address the changing requirements within the DOE.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)	No activity.	No activity.	LANL will also perform safety analyses and documentation to comply to DOE requirements and develop NDA standards. NDA standards will reduce reliance on chemical assay standards and thus reduce facility operating cost and provide more timely nuclear materials accountability as well as mitigate the mixed waste problems that are inherent in chemical assay. They will also participate in the Safeguards Measurements Evaluation Program to evaluate and assess the quality and effectiveness of safeguards materials accounting measurements at DOE nuclear facilities.
	Activities at Lawrence Livermore National Laboratory, California, continue to provide technical support to facilities using nondestructive assay technologies that encounter complicated measurement problems.	The Lawrence Livermore National Laboratory (LLNL), California, program assists DOE sites in the implementation of LLNL-developed nondestructive assay (NDA) technology within materials management and processing operations. Begin implementation of a prototype multigroup analysis program for gamma-ray spectra analysis for plutonium which can run in an unattended mode; upgrading of the two-detector NDA system currently in use within the complex; and implementation of a PC-based pulse-height analyzer to perform shipment and inventory verification measurements.	At Lawrence Livermore National Laboratory (LLNL), California, efforts will concentrate on assisting DOE sites in the implementation of LLNL developed NDA technology. Specifically, it will transfer a plutonium solution assay instrument to LANL for operational use and report on the test and evaluation of computed tomography measurements of weapons components for MC&A purposes.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)	Mound Facility, Ohio, continues development of consistent calorimetric assay capabilities to provide standards and training available for the calibration and use of calorimeters in the current and reconfigured complex, and conduct a calorimetry exchange program to ensure high quality performance of calorimeters involved in safeguards measurements. Activities include the fabrication of calorimetry standards for calibration and measurement controls.	Activities at Mound Facility, Ohio, include continued maintenance of calorimetric assay capabilities and training available to the calorimetry community, and conducting a calorimetry exchange program to ensure high quality performance of calorimeters involved in safeguards measurements.	Activities at Mound Facility, Ohio, will focus on developing and maintaining consistent, high quality calorimetric assay capabilities and providing a forum to resolve differences in calorimetric assay measurement performance.
	At Lawrence Livermore National Laboratory (LLNL), Livermore, California, provide technical support of the MC&A module of a vulnerability assessment tool, and field evaluations of LLNL-developed nondestructive assay techniques.	No activity.	No activity.
	Argonne National Laboratory-West, Idaho, activities include upgrading and demonstration of an integrated access control, material control, and materials tracking system to improve insider protection through real-time tracking of materials, and demonstrating improved calorimetric measurement systems designed to increase throughput of Pu measurements with no loss in accuracy.	At Argonne National Laboratory-West, Idaho, activities include the documentation and technology transfer of an integrated access control, material control, and materials tracking system that provides insider protection through real-time tracking of materials. At Argonne National Laboratory-East, Illinois, activities include the technology transfer of an improved calorimetric measurement systems designed to increase throughput of Pu measurements with no loss in accuracy.	At Argonne National Laboratory-West, Idaho, technology transfer activities of an integrated materials control system will be completed. This system will allow greater protection of SNM from diversion and the sophisticated insider and reduce expenditures for safeguards and security activities. At Argonne National Laboratory-East, Idaho, final documentation, training and technology transfer of the fast air chamber calorimetry technology will be provided. This technology will significantly reduce calorimetry measurement time and associated costs.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)	At Richland, Washington, the Pacific Northwest Laboratory activities include safeguards effectiveness evaluations, materials control and accounting curriculum development, and assessment of safeguards and security technologies for reducing nuclear material physical inventory requirements.	At Richland, Washington, the Pacific Northwest Laboratory activities include safeguards effectiveness evaluations, materials control and accounting curriculum development, and assessment of safeguards and security technologies for reducing nuclear material physical inventory requirements.	At Richland, Washington, the Pacific Northwest Laboratory activities include safeguards effectiveness evaluations and assessment of safeguards and security technologies for reducing nuclear material physical inventory requirements. PNL will also assist in defining and developing uniform material control and accounting of nuclear materials through the development of training courses for DOE personnel.
	At Martin Marietta Energy Systems (MMES), Tennessee, develop an attributes measurement system for special nuclear material in storage.	At Martin Marietta Energy Systems (MMES), Tennessee, provide further development of an attributes measurement system for special nuclear material in storage. Initiate activities at MMES focusing on special nuclear material (SNM) item surveillance through the enhancement and demonstration of technologies developed for other applications. Fiber optics, small inexpensive radiation and scintillation detectors are technologies which are included in the activities. These technologies allow SNM in storage throughout the complex to be monitored remotely.	At Martin Marietta Energy Systems (MMES), Tennessee, a continuous automated vault inventory system in DOE vault systems will be installed. This system will reduce the frequency of physical inventories and thus reduce operating costs and radiation exposure to personnel. A continuous-loop active tamper-indicating and locating device (TILD) will be tested in DOE vaults to determine the time and location of the opening of a storage unit. In addition, MMES will build a prototype vault that will provide the safe storage of plutonium materials at a significantly reduced cost than traditional vault systems. MMES will also assist in the technology transfer of the latest MC&A technologies and procedures through the development of training courses.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)	COMPUTER SECURITY Emphasis is again on technologies for the prevention of computer system intrusion and disablement, prevention of data corruption, and the development of information security education and automated monitoring techniques, as outlined under Base Development. The rapidly changing technology continues to be one of the most formidable challenges that we face today. Coupling this change with the enormous growth (35% per year) in use of computers and computing services requires that computer security continuously evolve simply to keep pace. The Departmental strategy continues to be four fold, with emphases on EDUCATION in the computer security arts, development of CERTIFICATION tools, VULNERABILITY ANALYSIS, and AUDITING of the network's security health. Full Scale Development concentrates on the Education, Vulnerability Analysis, and certification part of the strategy using technical expertise at Lawrence Livermore National Laboratory, California; and Oak Ridge National Laboratory, Tennessee, to develop the tools to support these themes as outlined below:	COMPUTER SECURITY Emphasis on independent verification and validation (IV&V) effort, the evaluation of multilevel products, automated information systems security education, and automated auditing techniques, as outlined under Base Development, continues under Full Scale Development. The greatest challenges faced by automated information systems (AIS) security continue to be the rapidly changing technology and enormous growth (35% per year) we are experiencing in the use of AIS and AIS services. The Departmental strategy continues to be four fold with emphasis on EDUCATION for the AIS security professional in the computer security arts, development of CERTIFICATION tools, VULNERABILITY ANALYSIS, and AUDITING of the network's security health. Full Scale Development concentrates on the Education and Vulnerability Analysis part of the strategy using technical expertise at Lawrence Livermore National Laboratory, California; and Martin Marietta Energy Systems (MMES), Tennessee, to develop the tools to support these themes as outlined below:	COMPUTER SECURITY Emphasis on independent verification and validation (IV&V) effort, the evaluation of multilevel products, automated information systems security education, and automated auditing techniques, as outlined under Base Development, continues under Full Scale Development. The greatest challenges faced by Information Systems Security continue to be the rapidly changing technology and the enormous growth (35% per year) being experienced in the use of Information Systems and services. The Information Systems Security Program strategy is to ensure the confidentiality, integrity and availability of DOE information assets while allowing the Department's customers access to all the information required to perform their assignments. This continues the emphasis on EDUCATION for the AIS security professional in the computer security arts, the development of CERTIFICATION tools, VULNERABILITY ANALYSIS, and AUDITING of the network's security health. Full Scale development concentrates on the Vulnerability Analysis, Education, and Certification parts of the strategy.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)	VULNERABILITY ANALYSIS AND INCIDENT HANDLING: Rapidly changing technology means that hardware and software require continuous review to avoid exploitation. The Computer Incident Advisory Capability (CIAC) at Lawrence Livermore National Laboratory (LLNL), California, is the DOE's first line of defense against viruses, worms and hackers. They work with the DOE computer operations personnel, law enforcement agencies, and commercial product vendors to identify holes in software that can be exploited by virus, worms, etc., and, consequently provide for community vulnerability awareness and development of appropriate countermeasures. They also assist Department computer security personnel in damage control when DOE computers come under attack. This effort is necessary to counter the threats imposed by an evolving hacker, worm, and virus community and supports a national incident handling activity being sponsored by the National Security Telecommunications and Information Systems Security Committee. The Martin Marietta Energy Systems (MMES), Tennessee, HQ Technical Support effort provides for the review of active networks to identify operational vulnerabilities.	VULNERABILITY ANALYSIS AND INCIDENT HANDLING: The Computer Incident Advisory Capability (CIAC) at Lawrence Livermore National Laboratory (LLNL), California, is the DOE first line of defense against viruses, worms and hackers. They assist Department computer security personnel in damage control when the DOE comes under attack from viruses, worms or hackers. This effort is necessary to meet the threats imposed by an evolving hacker community and supports a national incident handling activity being sponsored by the National Security Telecommunications and Information Systems Security Committee. They work with the DOE computer operations personnel and vendors to identify vulnerabilities in software that can be exploited by virus, worms, etc., and devise countermeasures. The CIAC is assisted at LLNL by the automated information systems security research and development task to develop methodology tests for network vulnerabilities. The Martin Marietta Energy Systems (MMES), Tennessee, Headquarters Technical Support effort provides for the review of active networks to identify operational vulnerabilities.	VULNERABILITY ANALYSIS AND INCIDENT HANDLING: The Computer Incident Advisory Capability (CIAC) at Lawrence Livermore National Laboratory (LLNL), California, is the DOE first line of defense against viruses, worms and hackers. They assist Department computer security personnel in damage control when the DOE comes under attack from viruses, worms or hackers. This effort is necessary to meet the threats imposed by an evolving hacker community. They work with the DOE computer operations personnel and vendors to identify vulnerabilities in software that can be exploited by virus, worms, etc., and devise countermeasures. The CIAC is supported at LLNL by the AIS security R&D task to develop intrusion detection capability for network vulnerabilities.

III. Technology and Systems Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Full Scale Development (Cont'd)	EDUCATION: Education is one main defense against the changing technology threat and is required by Public Law 100-235. This effort uses the program of instruction that is being recommended by the National Security Telecommunications and Information Systems Security Committee to support the National Industrial Security Program (NISP) Operations Manual currently under development. Education is a form of standardization and is needed if the Government is to achieve reciprocity among its Departments to support NISP. Martin Marietta Energy Systems (MMES), Tennessee, concentrates on developing the training program for staff with automated information systems security responsibilities. This training incorporates the results and lessons learned from the independent verification and validation work.	EDUCATION: Education for the automated information systems (AIS) security professional in the computer security arts is the main defense against the changing technology threat and is required by Public Law 100-235. This effort uses the program of instruction that is being recommended by the National Security Telecommunications and Information Systems Security Committee and will be used to support the National Industrial Security Program (NISP) Operations Manual currently under development. Martin Marietta Energy Systems (MMES), Tennessee, will concentrate on developing the training program for the AIS security professional staff with AIS security responsibilities.	EDUCATION: Education for the AIS security professional in the computer security arts is the main defense against the changing technology threat and is required by Public Law 100-235. This effort uses the program of instruction that is being recommended by the National Security Telecommunications and Information Systems Security Committee and will be used to support the National Industrial Security Program (NISP) Operations Manual currently under development. Martin Marietta Energy Systems (MMES) will concentrate on developing the training program for the AIS security professional staff with AIS security responsibilities.
	CERTIFICATION: LANL performs the independent verification and validation (IV&V) methodology and develops a team resource that is capable of supporting the National Industrial Security Program (NISP) and the changing environment. Evaluated multilevel products for use in creating partitions in networks and determined how to economically perform security acceptance tests.	CERTIFICATION: LANL will complete the independent verification and validation (IV&V) methodology and will develop a team resource that is capable of supporting the National Industrial Security Program (NISP) and the changing environment. Evaluate multilevel products for use in creating partitions in networks and determining how to economically perform security acceptance tests.	CERTIFICATION: The independent verification and validation (IV&V) effort will begin to deploy experienced teams to perform independent validations and verifications and train site personnel in their use. This resource is necessary to support the NISP/Complex 21 environment. Provide further evaluation of multilevel products for use in creating partitions in networks and determining how to economically perform security acceptance tests.
	$ 6,200	$ 5,225	$ 6,088
Technology and Systems Development	$ 22,905	$ 20,155	$ 21,905

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR SAFEGUARDS AND SECURITY

I. Preface: Classification/ Declassification

Program resources provide technical and administrative assistance to the Divisions of Classification and Policy and Program Operations to implement the declassification program in support of the Presidential program for "Reinventing Government" by (1) preparing guidance in classified DOE program areas; (2) developing and implementing orders and guidance for unclassified controlled information; (3) reviewing documents for classified or Unclassified Controlled Nuclear Information in connection with Freedom of Information Act, Privacy Act, and mandatory review requests, congressional testimony, litigation, National Archives systematic review program, and the Foreign Relations of the United States historical series; (4) developing, maintaining, and updating automated functions, which include developing state-of-the-art automation technology to accelerate the document review process and to enhance the development and issuance of classification/control guidance; (5) appraising DOE Headquarters and field offices to assess their compliance with classification/control requirements; and (6) developing and conducting general and specific training courses. Classification/Declassification program activities will also include the review of approximately 650,000 documents for declassification purposes, and development of computer-aided systems to increase the productivity of the Declassification process.

II. A. Summary Table: Classification/ Declassification

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Classification/ Declassification Resources.....	$ 8,980	$ 12,656	$ 11,456	$ -1,200
Total, Classification/ Declassification	$ 8,980	$ 12,656	$ 11,456	$ -1,200

II. B. Laboratory and Facility Funding Table: Classification/ Declassification

Lawrence Livermore National Lab	750	500	500	0
Los Alamos National Laboratory	500	500	500	0
Oak Ridge Operations Office	50	0	0	0
Office of Scientific & Technical Information	40	30	180	150
Richland Operations Office	635	950	640	-310
Sandia National Laboratories	850	900	700	-200
Washington Headquarters	6,155	9,776	8,936	-840
Total, Classification/ Declassification	$ 8,980	$ 12,656	$ 11,456	$ -1,200

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Classification/ Declassification			
Classification/ Declassification Resources	ONGOING BASE PROGRAM: Provide HQ and field support to develop and interpret complex technical classification guidance. As needed, update and distribute classification guides and UCNI guidelines to HQ and field elements. Review and coordinate proposed RD and FRD declassification actions and implement approved declassification actions. ($1,150)	ONGOING BASE PROGRAM: Provide HQ and field support to develop and interpret complex technical classification guidance. As needed, update and distribute classification guides and UCNI guidelines to HQ and field elements. Review and coordinate proposed RD and FRD declassification actions and implement approved declassification actions. ($1,150)	ONGOING BASE PROGRAM: Provide HQ and field support to develop and interpret complex technical classification guidance. As needed, update and distribute classification guides and UCNI guidelines to HQ and field elements. Review and coordinate proposed RD and FRD declassification actions and implement approved declassification actions. ($1,150)
	DECLASSIFICATION INITIATIVE: Complete plan of action and initiate the fundamental review of classification guidance to determine what information still requires protection in light of the dramatically changed world conditions. Examples of subject areas included in the fundamental review are nuclear weapons, weapons disassembly, nuclear materials, arms control and verification, nonproliferation, safeguards and security, intelligence, environment, and weapons complex reconfiguration. As the review progresses, update and distribute classification guides to HQ and field elements.($2,180)	DECLASSIFICATION INITIATIVE: Proceed with fundamental review of classification guidance. Update and distribute classification guides and UCNI guidelines to HQ and field elements. Develop procedures to periodically reevaluate classification guidance to keep pace with future world conditions and domestic objectives. ($2,340)	DECLASSIFICATION INITIATIVE: Accelerate the comprehensive review of technical classification guidance in those areas not completed in FY 1995. Update and distribute classification guides and UCNI guidelines to HQ and field elements. Performance Measurement: Decrease in number of new documents classified. ($3,060)
	Support is provided by detailees from SNLA and WHC and through support services contracts administered by DOE-HQ.	Support is provided by detailees from SNLA and WHC and through support services contracts administered by DOE-HQ.	Support is provided by detailees from SNLA and WHC and through support services contracts administered by DOE-HQ.

III. Classification/ Declassification (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Classification/ Declassification Resources (Cont'd)	ONGOING BASE PROGRAM: Review documents requested under statute (e.g., FOIA) or Executive order to identify classified information and UCNI. Identify classified information and UCNI in other documents, such as congressional testimony, documents requested during litigation, and documents in support of the Foreign Relations of the United States historical series. ($900)	ONGOING BASE PROGRAM: Review documents requested under statute (e.g., FOIA) or Executive order to identify classified information and UCNI. Identify classified information and UCNI in other documents, such as congressional testimony, documents requested during litigation, and documents in support of the Foreign Relations of the United States historical series. ($900)	ONGOING BASE PROGRAM: Review documents requested under statute (e.g., FOIA) or Executive order to identify classified information and UCNI. Identify classified information and UCNI in other documents, such as congressional testimony, documents requested during litigation, and documents in support of the Foreign Relations of the United States historical series. ($900)
	DECLASSIFICATION INITIATIVE: Accelerate base program by hiring, training, and certifying additional document reviewers. Initiate the process to provide large-scale dedicated support to the National Archives for the systematic review program of DOE historical documents (i.e., hiring, training, and certification of reviewers). ($1,125)	DECLASSIFICATION INITIATIVE: Further accelerate the base program. Provide large-scale, dedicated support to the National Archives for the systematic review program of DOE historical documents. ($1,741)	DECLASSIFICATION INITIATIVE: Maintain accelerated level of base program. Expand support to DOE field and other HQ offices for large-scale document review projects to support stakeholder requests. Provide large-scale, dedicated support to the National Archives for the systematic review program of DOE historical documents. Performance Measurement: Increase in number of documents reviewed for declassification. ($2,541)
	Support is provided through a support service contract administered by DOE-HQ.	Support is provided through a support service contract administered by DOE-HQ.	Support is provided through a support services contract administered by DOE-HQ.
	DECLASSIFICATION INITIATIVE: Initiate review and revision of broad classification policies to bring them into conformance with current world conditions and domestic objectives (review will include recommendations contained in Classification Policy Study). Review current Atomic Energy Act requirements, recommend revisions, and initiate process to have the law amended. Complete development of mechanisms to solicit input from stakeholders on declassification review priorities and initiate work sessions between DOE and stakeholders at HQ and	DECLASSIFICATION INITIATIVE: Proceed with review and revision of broad classification policies to bring them into conformance with current world conditions and domestic objectives. Complete review of Atomic Energy Act requirements, recommend revisions, and initiate process to have the law amended, if necessary. Conduct work sessions between DOE and stakeholders at HQ and field locations to solicit input declassification review priorities. Support is provided through support services contracts administered by DOE- HQ. ($790)	DECLASSIFICATION INITIATIVE: Complete evaluation of broad classification policies revised to assure they are in tune with current world conditions and domestic objectives. Initiate development of regulation for the Restricted Data program. Conduct meetings between DOE and Government and non-Government stakeholders to solicit input on declassification review priorities and other classification policy and procedural issues. Performance measurement: Decrease in number of new documents classified. Support is provided through support

III. Classification/ Declassification (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Classification/ Declassification Resources (Cont'd)	field locations. Support is provided through support services contracts administered by DOE-HQ. ($590)		services contracts administered by DOE-HQ. ($790)
	ONGOING BASE PROGRAM: Conduct biennial classification and UCNI appraisals of DOE operations offices. No activity planned at HQ. Support is provided through support services contract administered by DOE-HQ. ($110)	ONGOING BASE PROGRAM: Conduct biennial classification and UCNI appraisals of DOE operations offices. No activity planned at HQ. Support is provided through support services contract administered by DOE-HQ. ($145)	ONGOING BASE PROGRAM: Conduct biennial classification and UCNI appraisals of DOE operations offices. No activity planned at HQ. Support is provided through support services contract administered by DOE-HQ. ($145)
	ONGOING BASE PROGRAM: Develop and conduct general and specific classification training courses for Authorized Classifiers, Reviewing Officials, Classification Officers and analysts, and HQ Classification Representatives. Develop and conduct performance-based testing to evaluate knowledge in order to certify an individual as an Authorized Classifier. ($185)	ONGOING BASE PROGRAM: Develop and conduct specific classification training courses for Authorized Classifiers, Reviewing Officials, Classification Officers and analysts, and HQ Classification Representatives. Develop and conduct performance-based testing to evaluate knowledge in order to certify an individual as an Authorized Classifier. ($185)	ONGOING BASE PROGRAM: Develop and conduct general and specific classification training courses for Authorized Classifiers, Reviewing Officials, Classification Officers and analysts, and HQ Classification Representatives. Develop and conduct performance-based testing to evaluate knowledge in order to certify an individual as an Authorized Classifier. ($185)
	DECLASSIFICATION INITIATIVE: Develop and initiate a plan to train and certify large numbers of declassifiers required to accelerate the review of documents for declassification. ($760)	DECLASSIFICATION INITIATIVE: Proceed with training and certifying declassifiers required to accelerate the review of documents for declassification. ($525)	DECLASSIFICATION INITIATIVE: Train and certify declassifiers required to maintain the current level of review of documents for declassification. Initiate development of training course on conducting large-scale reviews. Performance Measurement: Increase in number of documents reviewed for declassification. ($705)
	Support is provided through support services contract administered by DOE-HQ.	Support is provided through support services contract administered by DOE-HQ.	Support is provided through support services contract administered by DOE-HQ.

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III. Classification/ Declassification (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Classification/ Declassification Resources (Cont'd)	ONGOING BASE PROGRAM: Periodically update the automated Classification Guidance System (CGS) to maintain the currency of classification and UCNI guidance. Provide support for computerized functions within the Office of Declassification. ($385)	ONGOING BASE PROGRAM: Periodically update the automated CGS to maintain the currency of classification and UCNI guidance. Provide support for computerized functions within the Office of Declassification. ($385)	ONGOING BASE PROGRAM: Periodically update the automated CGS to maintain the currency of classification and UCNI guidance. Provide support for computerized functions within the Office of Declassification. ($385)
	DECLASSIFICATION INITIATIVE: Initiate plan to develop state-of-the-art automation technology to accelerate the document declassification process and enhance the development and issuance of revised classification/control guidance. ($1,245)	DECLASSIFICATION INITIATIVE: Proceed with the development of software for the Advanced CGS which will allow the inclusion of graphs, pictures, and formulas which are an integral part of existing guidance, but which are unable to be included in the current CGS system because of software limitations. Upgrade obsolete hardware and software which will allow the electronic dissemination and decentralized desktop publishing of guidance. ($855)	DECLASSIFICATION INITIATIVE: Proceed with development and testing of software for the Advanced CGS. Reevaluate current computer systems in use to determine if additional upgrades are necessary. Enhance the Opennet system, which currently contains bibliographic data on declassified documents, to include the full text of the declassified documents. Performance measurement: Decrease in length of time to process request for document involving DOE classified information. ($955)
	Support is provided through support services contracts administered by DOE-HQ.	Support is provided through support services contracts administered by DOE-HQ.	Support is provided through support services contracts administered by DOE-HQ.
	No activity.	DECLASSIFICATION INITIATIVE: Initiate the Declassification Productivity Initiative which will use new automated approaches to dramatically improve the efficiency and effectiveness of the document declassification process. Will utilize state-of-the-art linguistic analysis by to-be-developed computer hardware and software to replace the initial review of a classified document currently done by a technical expert by tagging those portions of the document which are probably classified or controlled. ($3,000)	DECLASSIFICATION INITIATIVE: Work will continue on the Declassification Productivity Initiative. Due to initiation of this project in mid-FY 1995, additional funding was not identified for FY 1996. ($0)

III. Classification/ Declassification (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Classification/ Declassification Resources (Cont'd)	ONGOING BASE PROGRAM: Provide general administrative support to the Office of Declassification. Support is provided through support services contracts administered by DOE-HQ. ($350)	ONGOING BASE PROGRAM: Provide general administrative support to the Office of Declassification. Support is provided through support services contracts administered by DOE-HQ. ($640)	ONGOING BASE PROGRAM: Provide general administrative support to the Office of Declassification. Support is provided through support services contracts administered by DOE-HQ. ($640)
	$ 8,980	$ 12,656	$ 11,456
Classification/ Declassification	$ 8,980	$ 12,656	$ 11,456

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR SAFEGUARDS AND SECURITY

I. Preface: Program Direction

The Program Direction activity provides funds for salaries, benefits, travel, training, and other related costs for the Nuclear Safeguards and Security and Security Investigations decision units. Organizationally, activities are conducted by the Office of Security Affairs which includes the Office of Safeguards and Security and the Office of Declassification. The Office of Safeguards and Security is the single manager for safeguards and security in the DOE. The Office of Safeguards and Security mission is to ensure adequate protection for nuclear weapons, test devices, weapons components, special nuclear material, Government-owned nuclear facilities, and classified information under the DOE control. The Office of Declassification is responsible for declassification reviews in the areas of environment, safety and health and technology transfer; and identification of classified and unclassified sensitive information critical to the national security.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Program Direction	$ 11,916	$ 12,142	$ 12,410	$ 268
Total, Program Direction	$ 11,916	$ 12,142	$ 12,410	$ 268

II. B. Laboratory and Facility Funding Table: Program Direction

All Other	$ 11,916	$ 12,142	$ 12,410	$ 268
Total, Program Direction	$ 11,916	$ 12,142	$ 12,410	$ 268

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	Funding by Object Class:		
	Personnel Compensation $ 9,362	$ 9,542	$ 9,758
	Benefits 1,587	1,618	1,664
	Travel 640	652	655
	Contractor Services 327	330	333
	$11,916	$12,142	$12,410
	Provides funds for 143 FTEs which includes Office of Security Affairs support staff (14 FTEs), activities in support of S&S (91 FTEs), Classification/Declassification activities (33 FTEs), and the Central Training Academy (5 FTEs).	Provides funds for 143 FTEs which includes Office of Security Affairs support staff (12 FTEs), activities in support of S&S (93 FTEs), Classification/Declassification activities (33 FTEs), and the Central Training Academy (5 FTEs).	Provides funds for 143 FTEs which includes Office of Security Affairs support staff (12 FTEs), activities in support of S&S (93 FTEs), Classification/Declassification activities (33 FTEs), and the Central Training Academy (5 FTEs).
	143.0 FTE $ 11,916	143.0 FTE $ 12,142	143.0 FTE $ 12,410
Program Direction	143.0 FTE $ 11,916	143.0 FTE $ 12,142	143.0 FTE $ 12,410

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR SAFEGUARDS AND SECURITY

I. Preface: Capital Equipment

Capital Equipment provides for direct field support of Nuclear Safeguards and Security programs, the New Brunswick Laboratory, nuclear material measurement and analysis for domestic safeguards technology and systems development in the Office of Safeguards and Security, security countermeasures, computer security test and evaluation, and physical security for domestic safeguards.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capital Equipment	$ 4,101	$ 3,395	$ 3,395	$ 0
Total, Capital Equipment	$ 4,101	$ 3,395	$ 3,395	$ 0

II. B. Laboratory and Facility Funding Table: Capital Equipment

Albuquerque Operations Office	$ 125	$ 63	$ 63	$ 0
Argonne National Lab (West)	40	0	0	0
Brookhaven National Lab	25	25	25	0
Lawrence Livermore National Lab	40	90	90	0
Los Alamos National Laboratory	740	608	608	0
Mound Plant	75	68	68	0
New Brunswick Lab	220	207	207	0
Oak Ridge Operations Office	200	133	133	0
Sandia National Laboratories	860	681	681	0
Washington Headquarters	1,776	1,520	1,520	0
Total, Capital Equipment	$ 4,101	$ 3,395	$ 3,395	$ 0

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Provides a reduced level of support for operations and technology development equipment requirements consistent with "level" funding for technology development. Supports maintenance of HQ security systems.	Provides support to field offices for operations and technology development equipment requirements consistent with level of funding for technology development. Provides support to HQ for capitalized computer equipment requirements and for modification and/or replacement of parts to security system.	Provides support to field offices for operations and technology development equipment requirements consistent with level of funding for technology development. Provides support to HQ for capitalized computer equipment requirements and for modification and/or replacement of parts to security system.
	$ 4,101	$ 3,395	$ 3,395
Capital Equipment	$ 4,101	$ 3,395	$ 3,395

OVERVIEW

SECURITY INVESTIGATIONS

The objective of the Security Investigations activity is to ensure that the common defense and security of the United States will not be endangered by either: (1) granting access to classified matter (Restricted Data, Formerly Restricted Data and National Security Information) or special nuclear material to Department of Energy (DOE) and DOE contractor personnel in the performance of their duties; or (2) DOE employees who occupy sensitive positions.

The Department is committed to a policy of reducing the number of clearances in excess of those necessary to support the DOE mission and continued progress in reducing the time taken to grant clearances.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

OUTPUT MEASURES

Conduct approximately 27,000 personnel security clearance investigations.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Security Investigations

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Security Investigations					
Operating Expenses	$ 49,000	$ 33,827	$ -428 a/	$ 33,399	$ 33,247
Adjustment b/	-13,535	-4,000	-694	-4,694	-13,000
TOTAL	$ 35,465	$ 29,827	$ -1,122	$ 28,705	$ 20,247
Summary					
Operating Expenses	$ 35,465	$ 29,827	$ -1,122	$ 28,705	$ 20,247
Total Program	$ 35,465	$ 29,827	$ -1,122	$ 28,705	$ 20,247
Staffing (FTEs) c/	0	0	0	0	0

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"

a/ Funds transferred to Nuclear Safeguards and Security budget for a computer system for the Office of Declassification.
b/ Use of prior-year funds.
c/ Staffing for this activity is contained in the Nuclear Safeguards and Security budget.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Security Investigations

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 100	$ 0	$ 0	$ 0	$ 0
Albuquerque Operations Office	10,810	8,000	0	8,000	8,000
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 10,910	$ 8,000	$ 0	$ 8,000	$ 8,000
CHICAGO OPERATIONS OFFICE					
Chicago Operations Office	$ 560	$ 400	$ 0	$ 400	$ 400
IDAHO OPERATIONS OFFICE					
Idaho Operations Office	$ 1,213	$ 1,090	$ 0	$ 1,090	$ 1,090
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 2,208	$ 1,400	$ 0	$ 1,400	$ 1,400
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 4,875	$ 4,000	$ 0	$ 4,000	$ 4,000
Oak Ridge Institute for Science & Education	400	0	0	0	0
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 5,275	$ 4,000	$ 0	$ 4,000	$ 4,000
PITTSBURGH NAVAL REACTORS OFFICE					
Pittsburgh Naval Reactors	$ 1,394	$ 1,600	$ 0	$ 1,600	$ 1,600
ROCKY FLATS OFFICE					
Rocky Flats Office	$ 1,555	$ 1,400	$ 0	$ 1,400	$ 1,400
RICHLAND OPERATIONS OFFICE					
Richland Operations Office	$ 1,210	$ 1,140	$ 0	$ 1,140	$ 1,140
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 3,175	$ 2,000	$ 0	$ 2,000	$ 2,000
Oakland Operations Office	6,028	2,200	0	2,200	2,200

FIELD OFFICE FUNDING BY SITE - Security Investigations (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Subtotal, OAKLAND OPERATIONS OFFICE	$ 9,203	$ 4,200	$ 0	$ 4,200	$ 4,200
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Operations Office	$ 3,322	$ 2,500	$ 0	$ 2,500	$ 2,500
SCHENECTADY NAVAL REACTORS OFFICE					
Schenectady Naval Reactors	$ 960	$ 1,000	$ 0	$ 1,000	$ 1,000
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 11,190	$ 7,097	$ 0	$ 7,097	$ 6,517
ALL OTHER	$ -13,535	$ -4,000	$ -1,122	$ -5,122	$ -13,000
TOTAL	$ 35,465	$ 29,827	$ -1,122	$ 28,705	$ 20,247

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Security Investigations

FY 1995 Appropriation	$ 29,827
- Adjustment - Reprogramming to Nuclear Safeguards and Security budget for Office of Classification computer system	-428
- Adjustment - Use of Prior Year Balances to Offset FY 1995 New Budget Authority	$ +4,000
FY 1995 Adjusted	$ 33,399

Security Investigations

- Federal Bureau of Investigation Background Investigations - The number of FBI investigations decreases by 6 cases and reflects a price increase of $300 per case, resulting in an overall decrease	-29
- Single Scope Background Investigations - Request for initial Single Scope Backgroud Investigations is decreased by 1,243 cases with an estimated price increase of $475 per case	-3,746
- Initial Background Investigations - Eight less initial Background Investigations are planned with a price increase of $450 per case	-12
- Limited Background Investigations - While the number of initial Limited Background Investigations is unchanged, the price is expected to increase by $250 per case	+68
- Periodic Reinvestigation-SBI (PRIS) - The request for Periodic Reinvestigations is about the same but reflects a price increase of $125 per case	+1,391
- Limited Background Investigations - Approximately 1,000 Limited Background Investigations will be required due to the disclosure of derogatory information during routine reinvestigations	+2,300
- National Agency Checks - Approximately 1,454 less National Agency Checks are required with a cost increase of $8 per case, resulting in a slight overall increase	+1
- Related Security Investigations Activities - Related Security Investigations Activities will be continued at a reduced level of support	-125
FY 1996 OBLIGATIONAL AUTHORITY	$ 33,247
- Adjustment - Use of Prior Year funds to offset FY 1996 New Budget Authority	-13,000
FY 1996 Congressional Budget Request	$ 20,247

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

SECURITY INVESTIGATIONS

I. Preface: Security Investigations

Funds are primarily used to reimburse the Federal Bureau of Investigation (FBI) and the Office of Personnel Management (OPM) for the conduct of DOE-sponsored background investigations. The investigations are used by the DOE to determine an individual's eligibility for access (i.e., whether an individual is an acceptable or unacceptable security risk). Such determinations are required by provisions of the Atomic Energy Act of 1954, as amended, and Executive Orders. Also, some funds will be provided for other agencies and contractors as needed to support Security Investigations activities.

Effective March 1, 1992, DOE adopted the new Single Scope Background Investigation (SSBI) as the investigative product used as a basis for determining eligibility for "Q" and "Top Secret" clearances, and access to Sensitive Compartmented Information. This investigation covers the most recent 10 years of the individual's life and meets the investigative requirements stipulated in National Security Directive 63. If an individual's position has been designated as one of "a high degree of importance or sensitivity," the investigation is conducted by the FBI. All other initial investigations are conducted for the DOE by OPM. DOE no longer grants "Top Secret" or "Secret" clearances, but continues to grant "Q" and "L" clearances.

Individuals with a DOE "Q" clearance are reinvestigated at 5-year intervals by OPM. The OPM Periodic Reinvestigation-SBI (PRIS) has replaced the OPM Limited Background Investigation (LBI) and the National Agency Check with Credit (NACC) previously used for periodic reinvestigations for individuals with a DOE "Q" clearance. The DOE continues to obtain and use the investigative product of other agencies (such as the Defense Investigative Service, Department of State, and Central Intelligence Agency) as a basis for determining eligibility for a "Q" clearance, when appropriate. DOE personnel requiring an "L" clearance are subject to an OPM LBI and DOE contractor personnel are subject to a NACC to determine their initial clearance eligibility. Individuals with an "L" clearance are also reinvestigated (NACC) at 5-year intervals by OPM.

In addition, OPM Initial Background Investigations (BI's) are conducted on DOE employees who occupy "Critical Sensitive" positions but do not require access to classified matter or special nuclear material. DOE employees who occupy positions designated as "Noncritical Sensitive" or "Nonsensitive" and who do not require a security clearance are subject to an OPM National Agency Check with Inquiries (NACI).

The Department will continue the modernization of the clearance program through development of a state-of-the-art electronic transfer program for personnel security clearances between OPM, DOE operations offices, DOE contractors, and other Federal agencies.

II. A. Summary Table: Security Investigations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Federal Bureau of Investigation Background Investigations	$ 90	$ 78	$ 49	$ -29
Office of Personnel Management Initial Background Investigations				
Single Scope Background Investigations	25,718	15,649	11,903	-3,746
Initial Background Investigations	165	178	166	-12
Limited Background Investigations	1,004	562	630	68
Subtotal, Office of Personnel Management Initial Background Investigations	$ 26,887	$ 16,389	$ 12,699	$ -3,690
Office of Personnel Management Background Reinvestigations				
Periodic Reinvestigation-SBI (PRIS)	$ 16,978	$ 12,512	$ 13,903	$ 1,391
Limited Background Investigations	0	0	2,300	2,300
Subtotal, Office of Personnel Management Background Reinvestigations	$ 16,978	$ 12,512	$ 16,203	$ 3,691
National Agency Checks	$ 745	$ 870	$ 871	$ 1
Related Security Investigations Activities	4,300	3,550	3,425	-125
Use of Prior-Year Balances	-13,535	-4,694	-13,000	-8,306
Total, Security Investigations	$ 35,465	$ 28,705	$ 20,247	$ -8,458

II. B. Laboratory and Facility Funding Table: Security Investigations

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 10,810	$ 8,000	$ 8,000	$ 0
Chicago Operations Office	560	400	400	0
Idaho Operations Office	1,213	1,090	1,090	0
Lawrence Livermore National Lab	3,175	2,000	2,000	0
Nevada Operations Office	2,208	1,400	1,400	0
Oak Ridge Institute for Science & Education	400	0	0	0
Oak Ridge Operations Office	4,875	4,000	4,000	0
Oakland Operations Office	6,028	2,200	2,200	0
Pittsburgh Naval Reactors	1,394	1,600	1,600	0
Richland Operations Office	1,210	1,140	1,140	0
Rocky Flats Office	1,555	1,400	1,400	0
Sandia National Laboratories	100	0	0	0
Savannah River Operations Office	3,322	2,500	2,500	0
Schenectady Naval Reactors	960	1,000	1,000	0
Washington Headquarters	11,190	7,097	6,517	-580
All Other	-13,535	-5,122	-13,000	-7,878
Total, Security Investigations	$ 35,465	$ 28,705	$ 20,247	$ -8,458

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Security Investigations			
Federal Bureau of Investigation Background Investigations	Fully funds estimated need for 18 initial background investigations at $4,997 per case.	Supports 15 initial investigations at $5,200 per case.	Supports 9 initial investigations at $5,500 per case.
	$ 90	$ 78	$ 49
Office of Personnel Management Initial Background Investigations			
Single Scope Background Investigations	Funds anticipated need for 7,144 Single Scope Background Investigations (SSBI's) at a cost of $3,600 per case.	Supports approximately 3,888 SSBI's at $4,025 per case.	Supports approximately 2,645 SSBI's at $4,500 per case.
	$ 25,718	$ 15,649	$ 11,903
Initial Background Investigations	Fully funds the need for 50 initial Background Investigation (BI's) at a cost of $3,300 per case.	Provides funds for 48 initial BI's at $3,700 per case.	Provides funds for 40 initial BI's at $4,150 per case.
	$ 165	$ 178	$ 166
Limited Background Investigations	Fully funds the estimated need for 550 initial Limited Background Investigations (LBI's) at a cost of $1,625 per case.	Provides support for 274 initial LBI's at $2,050 per case.	Provides support for 274 initial LBI's at $2,300 per case.
	$ 1,004	$ 562	$ 630
Subtotal, Office of Personnel Management Initial Background Investigations	$ 26,887	$ 16,389	$ 12,699

III. Security Investigations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Office of Personnel Management Background Reinvestigations			
Periodic Reinvestigation-SBI (PRIS)	Fully supports the anticipated need for 16,978 PRIS's at a cost of $1,000 per case.	Supports approximately 11,122 PRIS's at $1,125 per case.	Supports approximately 11,122 PRIS's at $1,250 per case.
	$ 16,978	$ 12,512	$ 13,903
Limited Background Investigations	No activity.	No activity.	Supports approximately 1,000 LBI's, at $2,300 each, required as a result of derogatory information disclosed during routine reinvestigations.
	$ 0	$ 0	$ 2,300
Subtotal, Office of Personnel Management Background Reinvestigations	$ 16,978	$ 12,512	$ 16,203
National Agency Checks	Provides funds for National Agency Checks (NAC's) for 5,210 initial investigations and 7,635 reinvestigations at a cost of $58 per case.	Supports NAC's for 5,500 initial investigations and 7,885 reinvestigations at a cost of $65 per case.	Supports NAC's for 4,900 initial investigations and 7,031 reinvestigations at a cost of $73 per case.
	$ 745	$ 870	$ 871

III. Security Investigations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Related Security Investigations Activities	Initiate full implementation of the Department's voluntary Accelerated Access Authorization Program (AAAP) and phase out the AAAP pilot program. Initiate a Department-wide state-of-the-art electronic transfer program for personnel security clearances between OPM, FBI, DOE field offices and contractors, and other Federal agencies to minimize manual handling of personnel security clearances through the normal mail channels, and provide a pre-editing program to ensure quality control of personal data entering the automated system. Provide support for National Industrial Security Program personnel security clearance objectives, such as nation-wide uniform personal history form and national standards for administrative review. Provide for improved processing times for personnel security clearances through automation activities. Provide support for implementation of the Personnel Security Assurance Program (PSAP).	Follow-on implementation of the electronic transfer program for personnel security clearances; provide limited support for National Industrial Security Program personnel security clearance objectives; and provide for improved processing times for personnel security clearances through automation activities. Continue support of the Accelerated Access Authorization Program (AAAP).	Follow-on implementation of the electronic transfer program for personnel security clearances; upgrade DOE Integrated Security System (DISS) to multi-level system including automated visitor control and special access programs; improve processing times for personnel security clearances through automation activities; and support the Accelerated Access Authorization Program (AAAP).
	$ 4,300	$ 3,550	$ 3,425
Use of Prior-Year Balances	-$ 13,535	-$ 4,694	-$ 13,000
Security Investigations	$ 35,465	$ 28,705	$ 20,247

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OVERVIEW

DEPUTY ASSISTANT SECRETARY FOR SECURITY EVALUATIONS

Security Evaluations is designated by Order as the sole means of independent oversight of the effectiveness of safeguards and security policies and programs within the Department of Energy. This responsibility is accomplished through the inspection, testing, and analysis of safeguards and security policies, trends, and directions; the development of inspection methods and inspection-related training and certification programs; the conduct of inspections and assessments of safeguards and security management systems and practices; the tracking and trending of policy and management issues and corrective actions for Security Evaluations findings; and the evaluation of the effectiveness of safeguards and security policies and program implementation. Safeguards and security inspections are conducted at Department of Energy Headquarters and field sites to evaluate the status of protection provided national security interests, public safety, and program operations. Special studies and evaluations of the effectiveness of protection policies and programs are conducted to provide a consolidated statement of the status of protection programs throughout the Department of Energy complex. Analysis is conducted on a continuing basis to identify policy and implementation trends and to assess the cost effectiveness of program implementation. The information obtained by the Security Evaluations process is continuously requested by the General Accounting Office, the Department's Office of Inspector General, and numerous Congressional subcommittees.

Major objectives to accomplish Security Evaluations' mission include: ensuring that the Safeguards and Security Inspection and Assessment Program remains an independent, technically sound program responsive to the Department of Energy's needs; conducting safeguards and security analyses to determine the effectiveness of the Department's Safeguards and Security Programs and identifying trends in program effectiveness; identifying through inspections exemplary practices and innovative technologies to provide adequate security with few resources expended; monitoring the status of Security Evaluations inspection findings, management issues, policy issues, and other indicators of safeguards and security program status; professionally certifying all Security Evaluations inspectors; maintaining effective communications with all levels of management and oversight both internal and external to the Department; and providing Security Evaluations proven and tested inspection procedures and techniques to others within Environment, Safety and Health to support and enhance the development of a singular independent oversight capability. The vision for Security Evaluations is to provide the Department with credible, excellent, value-added, independent oversight of the Department's safeguards and security programs. The Radioactive Materials Packaging Certification program is responsible for certifying that radioactive material packages are in compliance with Federal safety regulations.

The Department of Energy's safeguards and security program strives to achieve effective and efficient protection of the Department's safeguards and security interests. To measure programmatic status, Security Evaluations inspects and assesses the management and oversight of the program and the protection afforded special nuclear material and classified and unclassified sensitive information. Information collected in safeguards and security topic areas, such as physical security systems, provides quantifiable data supporting the status determinations. Performance indicators for an effective independent oversight program that provides value-added analysis while promoting continuous improvement in the Department's performance include client satisfaction, adherence to budget and schedule, value-added/cost-recovery impact on field performance in meeting Departmental goals, proactive initiatives, and organizational preparation for the future.

OUTPUT MEASURES

- Provide information for cost-effective decisionmaking by operations office managers.
- Promote continuous improvement in the Department's performance through value-added and cost-recovery impact on field performance in meeting Departmental goals.
- Provide proactive initiatives and organizational preparation for the future.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Deputy Assistant Secretary for Security Evaluations

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
Operating Expenses	$ 14,906	$ 14,780	$ 680 a/	$ 15,460	$ 14,707
Subtotal, Deputy Assistant Secretary for Security Evaluations	$ 14,906	$ 14,780	$ 680	$ 15,460	$ 14,707
Adjustment	0	-1,600 b/	0	-1,600	0
TOTAL	$ 14,906	$ 13,180	$ 680	$ 13,860	$ 14,707
Summary					
Operating Expenses	$ 14,906	$ 13,180	$ 680	$ 13,860	$ 14,707
Total Program	$ 14,906	$ 13,180	$ 680	$ 13,860	$ 14,707
Staffing (FTEs)	29	32	0	32	32

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"

a/ Includes an internal reprogramming for a review of all nuclear-related materials and associated information sold or released to the public since 1989.
b/ Adjustment for use of prior year balances.

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OTHER DEFENSE ACTIVITIES
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FIELD OFFICE FUNDING BY SITE

Deputy Assistant Secretary for Security Evaluations

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Albuquerque Operations Office	$ 0	$ 200	$ 0	$ 200	$ 188
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 1,320	$ 1,442	$ 0	$ 1,442	$ 1,405
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 200	$ 0	$ 0	$ 0	$ 0
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 1,000	$ 948	$ 680	$ 1,628	$ 893
Richland Operations Office	100	100	0	100	97
Subtotal, RICHLAND OPERATIONS OFFICE	$ 1,100	$ 1,048	$ 680	$ 1,728	$ 990
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 1,525	$ 1,238	$ 0	$ 1,238	$ 1,205
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 10,761	$ 10,852	$ 0	$ 10,852	$ 10,919
ALL OTHER		-1,600		-1,600	
TOTAL	$ 14,906	$ 13,180	$ 680	$ 13,860	$ 14,707

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Deputy Assistant Secretary for Security Evaluations

FY 1995 Appropriation	$ 13,180
- Adjustment - Internal reprogramming for a review of all nuclear-related material and associated information sold or released to the public since 1989	+680
- Adjustment - Use of Prior Year Balances	+1,600
FY 1995 Adjusted	$ 15,460
- Adjustment	0
FY 1995 Comparable	$ 15,460
Operating Expenses	
- Operating Expenses - Reflects escalation rates issued by OMB for Federal pay ($79,000) and a reduction for the management and operating contractor and consulting services ($79,000)	0
- Operating Expenses - General reduction of $73,000 for contract reform	-73
- Operating Expenses - Reduction of $680,000 for FY 1995 internal reprogramming for a review of all nuclear-related material and associated information sold or released to the public since 1989	-680
FY 1996 CONGRESSIONAL Budget Request	$ 14,707

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPUTY ASSISTANT SECRETARY FOR SECURITY EVALUATIONS

I. Preface: Operating Expenses

Security Evaluations is the principal focal point for the independent oversight of the effectiveness of the Department of Energy's safeguards and security policies and programs, and their implementation across the Department. Safeguards and security inspections are conducted at the Department of Energy Headquarters and field sites to evaluate the status of protection afforded national security interests, public safety, and program operations. Management-level evaluations of the effectiveness of protection policies and program implementation are also conducted. Security Evaluations' goal is to maintain the support of the Administration, the confidence of Congress, and the cooperation of Headquarters and the field by providing valuable information for cost-effective decisionmaking. Another goal shared by all of the oversight organizations is to promote continuous improvement in the Department's performance, which is also directly linked to the highest priority Departmental goal of protecting the environment, public, and workers.

Inspections include Comprehensive Inspections, Safeguards and Security Readiness Reviews, and Special Inspections. Comprehensive Inspections address all pertinent inspection topics as contained in the Department of Energy's Orders and all significant facilities at each site inspected. Safeguards and Security Readiness Reviews reflect Security Evaluations' Strategic Plan's goals and objectives and provide the Department's senior managers with the operational status of Safeguards and Security Programs at the Department of Energy's facilities. In so doing, the Department's capability to provide enhanced security and increased safeguards and security cost effectiveness is heightened. Special Inspections are conducted to meet non-recurring needs and vary in scope. In addition, Security Evaluations develops inspection technologies for the inspection process. To assure that actual system performance achieves the intent of the current Department of Energy policies and to provide a realistic measure of safeguards and security program effectiveness at the inspected site, Security Evaluations utilizes system performance tests and root-cause analyses as appropriate. Security Evaluations participates in reviews including the North Atlantic Treaty Organization and other bilateral, multinational, and international activities concerning United States protection responsibilities. The Packaging Certification Program determines the acceptability of packaging for transportation of radioactive materials. This program assures that materials (fresh and spent fuel, high and low-level wastes, byproduct material, and special nuclear material) are shipped in accordance with the Department of Energy's Orders and Federal safety regulations.

II. A. Summary Table: Operating Expenses

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 14,906	$ 15,460	$ 14,707	$ -753
Use of Prior Year Balances	0	-1,600	0	1,600
Total, Operating Expenses	$ 14,906	$ 13,860	$ 14,707	$ 847

II. B. Laboratory and Facility Funding Table: Operating Expenses

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 0	$ 200	$ 188	$ -12
Argonne National Lab (East)	1,320	1,442	1,405	-37
Lawrence Livermore National Lab	1,525	1,238	1,205	-33
Nevada Operations Office	200	0	0	0
Pacific Northwest Lab	1,000	1,628	893	-735
Richland Operations Office	100	100	97	-3
Washington Headquarters	10,761	10,852	10,919	67
All Other	0	-1,600	0	1,600
Total, Operating Expenses	$ 14,906	$ 13,860	$ 14,707	$ 847

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses			
Operating Expenses	Funding by Object Class: Personnel Compensation $2,910 Benefits 550 Travel 400 $3,860	Funding by Object Class: Personnel Compensation $2,960 Benefits 577 Travel 400 $3,937	Funding by Object Class: Personnel Compensation $3,025 Benefits 594 Travel 400 $4,019
	Program Direction activity provided funds for salaries, benefits, travel, training, and other related costs for the Security Evaluations decision unit. Program Direction provided for full technical staffing of 29 full-time equivalents to carry out the activities of Security Evaluations. ($3,860)	Program Direction activity provides funds for salaries, benefits, travel, training, and other related costs for the Security Evaluations decision unit. Program Direction provides for full technical staffing of 32 full-time equivalents to carry out the activities of Security Evaluations. ($3,937)	Program Direction activity provides funds for salaries, benefits, travel, training, and other related costs for the Security Evaluations decision unit. Program Direction provides for full technical staffing of 32 full-time equivalents to carry out the activities of Security Evaluations. ($4,019)

III. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Security Evaluations conducted a total of 14 inspections consisting of Comprehensive Inspections, Safeguards and Security Readiness Reviews, and Special Inspections pursuant to a program goal of inspecting all key facilities within an acceptable timeframe while remaining within funding constraints. Inspection methods and techniques continued to evolve in the area of cost-effectiveness assessment. Inspector development and certification continued. ($4,514)	Security Evaluations is conducting a total of 14 inspections consisting of Comprehensive Inspections, Safeguards and Security Readiness Reviews, and Special Inspections pursuant to a program goal of inspecting all key facilities within an acceptable timeframe while remaining within funding constraints. Inspection methods and techniques continue to evolve, especially in the area of providing improved management-level information and integration of inspection results with overall analyses. Inspector development and certification continues. ($4,573)	Security Evaluations will conduct a total of 14 inspections consisting of Comprehensive Inspections, Safeguards and Security Readiness Reviews, and Special Inspections pursuant to a program goal of inspecting all key facilities within an acceptable timeframe while remaining within funding constraints. Inspection methods and techniques will continue to evolve, especially in the area of providing improved management-level information and integration of inspection results with overall analyses. Produce inspection reports that clearly and objectively represent the status of safeguards and security programs. Inspector development and certification will continue. ($4,526)
	Security Evaluations continued to conduct tracking and trend analysis on inspection results. Approximately 400 findings, issues, and other program status indicators were tracked and analyzed. The annual report providing Security Evaluations' independent assessment of the status of the Departmental Safeguards and Security Program was published as well as other tools, evaluations, reviews, and studies. Concepts for analysis and data manipulation and retrieval continued to be evaluated and implemented.	Security Evaluations continues to conduct tracking and trend analysis on inspection results. The number of findings, issues, and other program status indicators tracked and analyzed is expected to remain approximately 400. The Office will publish the annual report providing Security Evaluations' independent assessment of the status of the Departmental Safeguards and Security Program as well as tools, evaluations, reviews, and studies. New concepts for analysis and data manipulation and retrieval are being evaluated and implemented.	Security Evaluations will continue to conduct tracking and trend analysis on inspection results. The number of findings, issues, and other program status indicators tracked and analyzed is expected to remain approximately 400. The Office will publish the annual report providing Security Evaluations' independent assessment of the status of the Departmental Safeguards and Security Program as well as tools, evaluations, reviews, and studies. New concepts for analysis and data manipulation and retrieval will continue to be evaluated and implemented.
	Professional certification of Security Evaluations' inspectors continued. Full certification of inspectors in one topic area was accomplished. ($2,205)	Professional certification of Security Evaluations' inspectors continues. Full certification of inspectors in four topic areas will be complete by the end of Fiscal Year 1995.	Professional certification of Security Evaluations' inspectors will continue. Full certification of inspectors in eight topic areas will be complete by the end of Fiscal Year 1996. ($2,183)
		In early FY 1995, the Under Secretary requested a special review of all nuclear-related material and associated	

III. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)		information sold or released to the public since 1989. The review was conducted to determine whether previous releases of property or information have adversely affected non-proliferation goals or national security and whether the current systems are designed to prevent inappropriate releases. ($2,885)	
	General support of the Security Evaluations' program was provided. Support included overall planning and integration of Security Evaluations' program activities; conducting the Department's North Atlantic Treaty Organization Subregistry function and associated Joint Department of Energy/Department of Defense ATOMAL surveys; and providing information and document storage, search, and retrieval services in support of the inspection and analysis functions. ($1,382)	A somewhat reduced level of general support of the Security Evaluations' program will be provided. Among these will be overall planning and integration of Security Evaluations' program activities; conducting the Department's North Atlantic Treaty Organization Subregistry function and associated Joint Department of Energy/Department of Defense ATOMAL surveys; providing information and document storage, search, and retrieval services in support of the inspection and analysis functions; tracking actions; and managing tasking and funding to provide topical area specialists from laboratories and support contractors to function in general support of the Security Evaluations' mission. ($1,285)	A somewhat reduced level of general support of the Security Evaluations' program will be provided. Among these will be overall planning and integration of Security Evaluations' program activities; conducting the Department's North Atlantic Treaty Organization Subregistry function and associated Joint Department of Energy/Department of Defense ATOMAL surveys; providing information and document storage, search, and retrieval services in support of the inspection and analysis functions; tracking actions; and managing tasking and funding to provide topical area specialists from laboratories and support contractors to function in general support of the Security Evaluations' mission. ($1,272)
	Continued to process existing packaging certification dockets and to examine existing designs. The number of new applications was almost equal to the approval rate, thereby maintaining the constant, high backlog. Continued to administer the Department's Department of Transportation 7A Type A testing and Evaluation Program but at a reduced level. ($2,945)	Perform most of the same activities as Fiscal Year 1994, except that the number of new applications is expected to be two to three times the approval rate because of the expanding needs in decontamination and decommissioning activities. ($2,780)	Perform most of the same activities as Fiscal Year 1995, except that the number of new applications is expected to increase because of the expanding needs in decontamination and decommissioning activities. ($2,707)

III. Operating Expenses (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	29.0 FTE $14,906	32.0 FTE $15,460	32.0 FTE $14,707
Use of Prior Year Balances	$0	-$ 1,600	$0
Operating Expenses	29.0 FTE $14,906	32.0 FTE $13,860	32.0 FTE $14,707

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES

OVERVIEW

NUCLEAR SAFETY

GOALS AND OBJECTIVES

Ensuring the safety and health of DOE workers and the public, and protection of the environment, are of the highest priority of the Department and is fundamental to the goals and objectives of the Office of the Assistant Secretary for Environment, Safety and Health (ES&H). To that end, Nuclear Safety activities are designed to assure continuous improvement in nuclear safety at DOE facilities and to ensure the highest level of protection reasonably achievable for DOE workers, the general public and the environment. The first four activities of Nuclear Safety contribute to ES&H goals and objectives by performing independent safety oversight of DOE nuclear operations, providing timely and quality technical assistance that meet customer safety needs, assisting in the development and implementation of effective policies and safety standards, and providing pertinent safety information in a timely manner and to the right customers. The fifth activity helps ensure the goal of effective and efficient utilization of resources and the sixth activity addresses special Secretarial initiatives.

STRATEGY

The strategy is to pursue nuclear safety improvements through the utilization of state-of-the-art safety technology, and to assist and encourage program offices and line management to achieve an impeccable level of safety in every facet of their operation. Technical competence, thoroughness, responsiveness, consistency and professionalism will be demonstrated in the conduct of safety oversight and a spirit of cooperation and interdependence will be employed in working with program offices and line management. In so doing, it is envisioned that a high degree of safety consciousness will be infused throughout the DOE nuclear community.

Standards activities include providing substantive assistance to DOE offices and line organizations in the development and implementation of nuclear safety policies, rules, orders and guidance. Reviews of various documents are performed such as facility safety analysis reports, probablistic risk assessments and accident analyses contained in environmental (NEPA) documents, analyses of the vulnerability of DOE facilities to natural hazards phenomena, and analyses of emergency preparedness plans. Output Measures: A decrease in lost work days due to occupational illness or injury, a decrease in the number of personnel contaminations with radionuclides, and a decrease in the number of serious incidents where policy is the root of the problem.

The activities of Line Ownership and Accountability for Nuclear Safety focus on helping line organizations to safely manage DOE nuclear facilities and on providing technical assistance to improve their approach, strategy and mode of operation to ensure safety. Major activities include assessing and evaluating the operation of a variety of interdependent functional program areas related to nuclear safety as well as performance with regard to operational procedures, startup/restart programs, criticality safety, and decontamination and decommissioning. The effectiveness of management and contractor practices to mitigate age-related degradation of DOE facilities are also evaluated as are radiological work practices to assure worker protection. In addition, support is provided through daily observations performed by ES&H personnel stationed on-site at major DOE complexes who provide direct independent feedback to improve management processes and to contribute to nuclear safety. Output Measures: A downward trend in radiological exposures, releases and worker injuries; a reduction in adverse environmental impacts; and a downward trend in the recurrence of significant environment, safety and health issues.

Communication and Cooperation activities promote effective integration, communication and cooperation among and within DOE and contractor organizations; particularly with regard to the sharing of nuclear safety information and lessons learned. Major activities include publishing and distributing a Weekly Operating Experience Summary, Safety Notices and other safety related information. Output Measures: The timely identification of lessons learned and tracking of adverse trends within the DOE nuclear community to avoid future incidents.

Compliance Assurance activities include implementing DOE's statutory nuclear safety enforcement authority by establishing effective voluntary

compliance assurance programs and processes. Technical assistance is provided to line organizations to ensure proper development and submittal of implementation plans necessary to meet the statutory requirements. Potential violations of nuclear safety requirements are investigated to determine whether civil or criminal sanctions are warranted. In certain instances, independent investigation of nuclear safety issues raised by Congress, workers and/or the public are performed. In addition, enforcement policies and procedures are developed in close coordination with the Inspector General and the General Counsel. Output Measures: An increase in voluntary contractor compliance with DOE nuclear safety requirements enhancing the protection of DOE workers, the public and the environment.

The activities of Nuclear Safety Operations help ensure that Nuclear Safety Oversight resources are effectively and efficiently utilized in support of the goals and objectives of ES&H. Included are projects to develop training and qualification plans to ensure a highly qualified and knowledgeable staff; procurement planning and preparation to obtain the services of experts in various engineering disciplines at a reasonable cost; and projects that cover the entire spectrum of financial activities to ensure that funds are judiciously utilized for their intended purposes. Output Measures: Optimum utilization of ES&H resources and elimination of unnecessary expenditures.

Special Secretarial Nuclear Safety Initiatives include providing technical support on nuclear safety concerns to organizations within DOE and to other Federal entities as directed by the Secretary. A major project is participation on the Interagency Nuclear Safety Review Panel (INSRP) which provides DOE and the President with an independent assessment of the risks associated with launching nuclear powered energy sources into space. For each launch of a space mission that contains a nuclear powered energy source, a safety evaluation report must be prepared by INSRP that is sound, technically defensible and summarizes the analyses and evaluations performed by technical experts. Activities also include a project to provide safety oversight of three Department of Defense (DOD) reactors that are not under the cognizance of Naval Reactors, and a project to assess the health, safety and environmental vulnerabilities of existing storage of spent fuel and other types of irradiated materials at DOE facilities and of the disposition of plutonium. Output Measure: More informed decisions are made on critical nuclear safety issues.

The funding and allocation of resources as indicated herein are on the basis of activity and project needs and not along organizational lines of ES&H. The FY 1995 appropriation will be supplemented by uncosted and unobligated prior year balances to continue the FY 1994 level of effort into FY 1996.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

DEPARTMENT OF ENERGY
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OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Nuclear Safety

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Nuclear Safety Oversight					
Operating Expenses	$ 24,853	$ 21,629	$ 0	$ 21,629	$ 24,629
Capital Equipment	50	50	0	50	50
Subtotal, Nuclear Safety Oversight	$ 24,903	$ 21,679	$ 0	$ 21,679	$ 24,679
Subtotal, Nuclear Safety Oversight	$ 24,903	$ 21,679	$ 0	$ 21,679	$ 24,679
Adjustment	0	-5,000 a/	0	-5,000 a/	0
TOTAL	$ 24,903	$ 16,679	$ 0	$ 16,679	$ 24,679
Summary					
Operating Expenses	$ 24,853	$ 16,629	$ 0	$ 16,629	$ 24,629
Capital Equipment	50	50	0	50	50
Total Program	$ 24,903	$ 16,679	$ 0	$ 16,679	$ 24,679
Staffing (FTEs)	73	73	0	73	73

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"
P.L. 100-408, "Price Anderson Amendments Act of 1988"

a/Adjustment reflects use of prior year balances.

DEPARTMENT OF ENERGY
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OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Nuclear Safety

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Los Alamos National Laboratory	$ 25	$ 0	$ 0	$ 0	$ 0
Sandia National Laboratories	250	0	0	0	0
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 275	$ 0	$ 0	$ 0	$ 0
CHICAGO OPERATIONS OFFICE					
Argoonne National Lab (East)	$ 0	$ 400	$ 0	$ 400	$ 0
Brookhaven National Lab	1,430	1,000	0	1,000	0
Subtotal, CHICAGO OPERATIONS OFFICE	$ 1,430	$ 1,400	$ 0	$ 1,400	$ 0
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 760	$ 500	$ 0	$ 500	$ 0
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Institute for Science & Education	$ 300	$ 0	$ 0	$ 0	$ 0
Oak Ridge National Lab	570	0	0	0	0
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 870	$ 0	$ 0	$ 0	$ 0
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 580	$ 400	$ 0	$ 400	$ 0
Hanford Site	25	0	0	0	0
Subtotal, RICHLAND OPERATIONS OFFICE	$ 605	$ 400	$ 0	$ 400	$ 0
OAKLAND OPERATIONS OFFICE					
Lawrence Berkeley Lab	$ 33	$ 0	$ 0	$ 0	$ 0
Stanford Linear Accelerator Center	50	0	0	0	0
Lawrence Livermore National Lab	187	0	0	0	0
Subtotal, OAKLAND OPERATIONS OFFICE	$ 270	$ 0	$ 0	$ 0	$ 0

FIELD OFFICE FUNDING BY SITE - Nuclear Safety (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 20,693	$ 19,379	$ 0	$ 19,379	$ 24,679
ALL OTHER	$ 0	$ -5,000	$ 0	$ -5,000	$ 0
TOTAL	$ 24,903	$ 16,679	$ 0	$ 16,679	$ 24,679

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Nuclear Safety Oversight

FY 1995 Appropriation	$ 16,679
- Adjustment, Use of Prior Year Balances	5,000
FY 1995 Adjusted	$ 21,679
- Adjustment	0
FY 1995 Comparable	$ 21,679

Nuclear Safety Oversight

- STANDARDS OVERSIGHT: Increase standards implementation activities, increase the number of national and international standards reviewed for adaptability to DOE operations, and begin D&D evaluations and assessments	+490
- LINE MANAGEMENT OWNERSHIP AND ACCOUNTABILITY: Fund Radiological Oversight from Other Defense Activities appropriation, increase support to onsite representatives and provide for inflation	+495
- COMMUNICATION AND COOPERATION: Provide for inflation	+ 65
- COMPLIANCE ASSURANCE: Increase activities to assist organizations in carrying out their responsibility to comply with DOE nuclear safety requirements and provide for inflation	+335
- NUCLEAR SAFETY OPERATIONS: Restore funding to FY 1994 level of effort for Training, Information and Resource Management, and Planning and Scheduling	+605
- SPECIAL SECRETARIAL NUCLEAR SAFETY INITIATIVES: Complete safety oversight of the gaseous diffusion plants and initiate tracking of corrective actions to mitigate vulnerabilities identified by the DOE Highly Enriched Uranium Study	+100
- PROGRAM DIRECTION: Provide for salary increase and an increase in training and travel activities	+910
FY 1996 Congressional Budget Request	$ 24,679

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR SAFETY

I. Preface: Nuclear Safety

Consistent with the realignment of the Office of Nuclear Safety (ONS) under the Assistant Secretary for Environment, Safety and Health (ES&H), an intense review was performed during FY 1994 of the programs and projects of ONS and those of ES&H with the intent of achieving efficiencies and economies by eliminating duplication of effort and program overlap, consolidating and streamlining similar activities, and stretching out or terminating lower value projects. As a result of this review, the activities described herein will be performed by various offices within the reorganized Offices of ES&H effective as of December, 1994.

The primary thrusts of Nuclear Safety activities in FY 1995 and FY 1996 under the reorganization will be to continue to provide credible, objective, value-added oversight to improve and enhance the safe operation of DOE nuclear facilities. Specific activities are as follows:

- Standards: Assist in the development and implementation of nuclear safety policies, rules, orders and guides through the review of facility safety analysis reports, probabilistic risk assessments and accident analyses in environmental documents, vulnerability analyses of DOE nuclear facilities to natural hazards, and emergency preparedness plans.

- Line Management Ownership and Accountability for Nuclear Safety: Assist line organizations and contractors in managing and assuring nuclear and radiological safety at DOE facilities through assessments and evaluations of nuclear facility operations, significant event and technical issues, and nuclear safety functional areas.

- Communication and Cooperation: Promote more effective communication of safety information and greater cooperation in safety related matters, both vertically and horizontally, throughout the DOE nuclear community.

- Compliance Assurance: Implement DOE's statutory nuclear safety enforcement program by establishing effective and voluntary compliance assurance programs and processes and investigate potential violations of nuclear safety requirements to determine whether civil or criminal sanctions are warranted.

- Nuclear Safety Operations: Optimize the allocation of Nuclear Safety resources and provide the necessary services and support to achieve program goals and objectives.

- Special Secretarial Nuclear Safety Initiatives: Provide expert technical support to other Federal entities on nuclear safety related activities as directed by the Secretary.

II. A. Summary Table: Nuclear Safety Oversight

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	% Change
Standards Oversight	$ 1,610	$ 1,200	$ 1,690	+41
Line Management Ownership and Accountability for Nuclear Safety	5,190	5,010	5,505	+10
Communication and Cooperation	1,460	1,580	1,645	+4
Compliance Assurance	725	800	1,135	+42
Nuclear Safety Operations	3,273	1,705	2,310	+35
Special Secretarial Nuclear Safety Initiatives	2,750	1,250	1,350	+ 8
Program Direction				
Federal and Contractual Support	9,845	10,084	10,994	+9
Capital Equipment	50	50	50	0
Subtotal, Program Direction	$ 9,895	$ 10,134	$ 11,044	+9
Use of Prior Year Balances		-5,000		
Total, Nuclear Safety Oversight	$ 24,903	$ 16,679	$ 24,679	+14

II. B. Major Laboratory and Facility Funding

Brookhaven National Lab	$ 1,430	$ 1,000	$ 0	-100
Argonne National Lab (East)	$ 0	$ 400	$ 0	-100
Los Alamos National Laboratory	$ 25	$ 0	$ 0	0
Pacific Northwest Lab	$ 580	$ 400	$ 0	-100
Washington Headquarters	$ 20,693	$ 19,379	$ 24,679	+21
Hanford Site	$ 25	$ 0	$ 0	0
Idaho National Engineering Lab	$ 760	$ 500	$ 0	-100
Oak Ridge National Lab	$ 570	$ 0	$ 0	0
Sandia National Laboratories	$ 250	$ 0	$ 0	0
Lawrence Livermore National Lab	$ 187	$ 0	$ 0	0
Stanford Linear Accelerator (SLAC)	$ 50	$ 0	$ 0	0
Lawrence Berkley Laboratory	$ 33	$ 0	$ 0	0
Oak Ridge Institute for Science	$ 300	$ 0	$ 0	0
All Other	$ 0	$ -5,000	$ 0	0
Total, Nuclear Safety Oversight	$ 24,903	$ 16,679	$ 24,679	+16

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Safety			
Standards	Focused activities on developing broad-based criteria related to standards for the environment, safety and health programs.	Continue activities to develop criteria for a DOE Standards Program that include identifying and planning a technical assistance program for the implementation of standards, taking inventory of the existing standards effort at Headquarters, and developing a standards closure process.	Increase standards criteria activities to include developing a standards exemption process, conduct Headquarters and field workshops to brief the DOE standards program and provide assistance to line organizations in implementing the criteria.
	Reviewed new nuclear safety orders, guidance documents and proposed nuclear safety rules, including resolution of public comments.	Utilizing uncosted balances, perform reviews and comment on draft orders, guidance documents, technical standards and proposed final nuclear safety rules to help ensure that DOE nuclear safety standards are of the highest possible quality.	No Activity.
	Assimilated and evaluated national and international standards for applicability to DOE operations and established a computerized database. Continued an exchange of safety information with the United Kingdom.	Assimilate and evaluate approximately 5 national and international standards that cover the life cycle of nuclear facilities for adaptability to DOE operations and update the database. Participate in at least 3 working level meetings with nuclear safety experts from the United Kingdom to share standards information and best practices.	Increase the number of national and international standards evaluated for adaptability to DOE operations to approximately 8. Update the database and continue sharing standards information and best practices with the United Kingdom.
	Continued development of prototype software for a knowledge-based system for estimating dose/consequence of radioactive and toxic materials released from nuclear facilities and development of methodology for assessing worker safety under radiological accident conditions at DOE nuclear facilities.	Test prototype software for a knowledge-based system to estimate dose/consequence of radioactive and toxic material releases. Complete project to develop methods for assessing worker safety under radiological accident conditions and issue final report.	Complete development of knowledge-based software to estimate dose/consequence of radioactive and toxic material releases.

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Standards (Cont'd)	Expanded risk analysis activities to develop a DOE concensus on appropriate risk criteria for use by DOE and its contractors to determine faulty design and operating conditions.	Utilizing uncosted balances, finalize the data base for radiological release fractions and accompanying guidance manual. Also, finalize a set of risk acceptance criteria and an associated DOE Policy Statement.	No Activity.
	Documented lessons learned from reviews of Environmental Assessments (EAs) and Environmental Impact Statements (EISs).	Analyze lessons learned documented from EAs/EISs to improve the development of the accident analysis sections of these documents.	Provide assistance to line and field management in reviewing accident analysis sections of selected safety, risk and environmental documentation. Incorporate information into the lessons learned report which will expedite other safety, risk and environmental documentation reviews, and help identify potential generic weaknesses in the approach and methodology that relates to protecting the public, workers and the environment.
	Developed a systematic approach to D&D data collection and performance measurements that can be used for crosscutting observations, trending, standards development and other activities for which D&D data are sparse or nonexistent.	Utilizing uncosted balances and FY 1995 funds, develop procedures for D&D evaluations/assessments and prepare a D&D surveillance plan for data collection. Perform surveillances of selected facilities to verify methodology, and issue a final plan.	Begin evaluations and assessments of processes and programs currently in use to manage facility transition to D&D status, as well as the actual conduct of D&D operations. Complete a set of D&D principles for use DOE wide.
	Evaluated the effectiveness of management processes and programs to implement new DOE standards on nuclear safety documentation. Developed lessons learned from reviews of environmental documents.	Utilizing uncosted balances to supplement FY 1995 funds, evaluate program and field office plans, schedules and resource allocations for reviewing and approving Safety Analyses Reports (SAR) on nuclear bays, nuclear staging of special nuclear material component modules, special purpose nuclear material explosive modules and on nuclear cells. Prepare final report on lessons learned from reviews of environment documents.	Review the implementation plan of DOE Order 5480.23 for the Pantex Facility and the Updated Safety Analysis Report (SAR). Specifically, review the implementation plan for SAR upgrade and Basis for Interim Operation, SAR for various nuclear facilities as they become available, and prepare an evaluation report.

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Standards (Cont'd)			
	Developed plans to assist DOE in establishing effective and cost-efficient methods for the seismic qualification of equipment in DOE nuclear facilities.	Review seismic guidance on masonary walls, ventilation systems, and gloveboxes and prepare a report on each review.	Complete the development of draft Seismic Qualification Utility Group (SQUG) methodology for use at DOE facilities, coordinate DOE and DNFSB review and approval of methodology, conduct SQUG training, and assist DOE in performing in-facility reviews of SQUG as required.
	$ 1,610	$ 1,200	$ 1,690
Line Management Ownership and Accountability for Nuclear Safety	Conducted assessments of DOE and contractor management processes and programs essential to nuclear safety by multi-discipline engineering teams to identify failures or strengths in a program, or the implementation of a program, which would lead to specific safety deficiencies or to good safety practices. Prepared reports on each assessment.	Phase-out multi-discipline assessments.	No Activity
	Assessed the ability of line organizations to implement timely corrective actions and compensatory measures for aging on the structural and functional integrity of safety related systems and components.	Evaluate approximately 4 nuclear facilities that are subject to aging degradation focusing on identifying effective processes and programs to mitigate the impact of aging on essential structures, systems, and components. Prepare a report on each assessment.	Perform approximately 4 assessments of nuclear facilities that are subject to aging degradation to determine the ability of line organizations to implement timely corrective actions and compensatory measures for aging on the structural and functional integrity of safety related systems and components. Prepare a report on each assessment that focuses on identifying effective processes and programs to mitigate the impact of aging on the assessed facility. Utilize assessment data to develop draft technical bases from which risk significance of aging on safety related structures, systems, and components can be determined throughout the DOE nuclear community.

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Line Management Ownership and Accountability for Nuclear Safety (Cont'd)	Assessed line organization and contractor implementation of DOE Nuclear Criticality Safety requirements.	Utilizing uncosted balances to supplement FY 1995 funds, conduct assessments of approximately 4 facilities with known or suspected criticality safety concerns, with weak criticality programs, with large quantities of fissionable material, or with new or radically altered missions.	Conduct assessments of approximately 4 facilities with known or suspected criticality safety concerns, with weak criticality programs, with large quantities of fissionable material, or with new or radically altered missions.
	Utilizing prior year funds, performed radiological control evaluations focused on efforts and initiatives by DOE line organizations to implement the DOE Radiological Control Manual.	Perform approximately 18 radiological safety evaluations and assist line management in ensuring that DOE workers and the public are not unreasonably exposed to occupational radiation. Assist DOE in establishing policies, standards and guidance for radiological protection and health physics.	Perform approximately 18 radiological safety evaluations and assist line management in ensuring that DOE workers and the public are not unreasonably exposed to occupational radiation. Assist DOE in establishing policies, standards and guidance for radiological protection and health physics.
	Conducted on-site day-to-day surveillance of facility operations and provided oversight of line organizations on effective management processes and programs.	Continue on-site day-to-day surveillance of facility operations and provide oversight of line organizations on effective processes and programs to enhance safety. Prepare reports on safety issues and occurrences.	Continue on-site day-to-day field surveillance of facility operations and provide oversight of line management on effective processes and programs to enhance safety. Prepare reports on safety issues and occurrences.
	Performed assessments to make certain that a nuclear facility shutdown for safety reasons was ready to resume operations, or that a major new nuclear facility or activity was ready to commence operations.	Perform assessments of all restarts and major new starts to ensure compliance with the 52 related DOE Orders and prepare a report recommending concurrence or non-concurrence for each assessment. Evaluate safety issues associated with the technology selection, design, and construction, for each Major System Acquisition and Major Project involving radioactive material and prepare reports for the DOE Energy Systems Acquisition Advisory Board that support either concurrence or nonconcurrence for safe startup or restart.	Perform assessments of all restarts and major new starts to ensure compliance with the 52 related DOE Orders and prepare a report recommending concurrence or non-concurrence for each assessment. Evaluate safety issues associated with the technology selection, design, and construction, for each Major System Acquisition and Major Project involving radioactive material and prepare reports for the DOE Energy Systems Acquisition Advisory Board that support either concurrence or nonconcurrence for safe startup or restart.
	$ 5,190	$ 5,010	$ 5,505

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Communication and Cooperation	Performed daily reviews of reported occurrences from DOE and non-DOE nuclear facilities to determine their significance to safety within the DOE complex and communicate the lessons learned to DOE line managers. Expanded project to include evaluation of line management determination and resolution of root causes of the occurrences.	Provide feedback to DOE programs on the lessons learned from nuclear operating experience. Activities include daily event reviews and short term event analyses and the publishing of a weekly summary of events; reviews of site specific historical data to supplement the DOE information base; reviews of operating experience documents and publishing Safety Notices and Letters; and validating operating experience feedback processes at DOE nuclear facilities.	Provide feedback to DOE programs on the lessons learned from nuclear operating experience. Activities include daily event reviews and short term event analyses and the publishing of a weekly summary of events; reviews of site specific historical data to supplement the DOE information base; reviews of operating experience feedback on documents and publishing Safety Notices and Letters; and validating operating experience feedback processes at DOE nuclear facilities.
	Evaluated management processes and programs that were developed to implement DOE Order 5000.3B, Occurrence Reporting and Processing of Operations Information. Prepared a report on each evaluation. Assessed emergency preparedness programs and response capabilities.	Evaluate management processes and programs with regard to resolving generic nuclear safety issues of significance and to prevent recurrence of incidents at the same or other sites across the DOE complex. Prepare a report on each evaluation. Assess emergency preparedness programs and response capabilities.	Evaluate management processes and programs with regard to resolving generic nuclear safety issue of significance and to prevent recurrence of incidents at the same or other sites across the DOE complex. Prepare a report on each evaluation. Assess emergency preparedness programs and response capabilities.
	Assessed how well safety information is communicated within and across line organizations and provided technical assistance to improve the communication of safety issues and the quality of major program reviews, inter-office conferences and working groups.	No Activity.	No Activity.
	$ 1,460	$ 1,580	$ 1,645
Compliance Assurance	Implemented a pilot program to determine how nuclear safety requirements should be imposed, implemented and enforced for diverse DOE activities and facilities.	No activity.	No activity.

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Compliance Assurance (Cont'd)	Continued education and communication activities including workshops at Headquarters, field offices, and contractor sites to promote the concept of voluntary compliance and to describe the attributes of an effective compliance assurance program.	Initiate activites to assist DOE line and Headquarters organizations in carrying out their responsibilities consistent with DOE Enforcement Policy when evaluations of nuclear safety requirements are identified.	Increase activities to assist DOE line and Headquarters organizations in carrying out their responsibilities when violations of nuclear safety requirements are identified to ensure consistent application of DOE Enforcement Policy.
	Established a noncompliance and tracking system.	Maintain the reporting system to monitor site noncompliance with nuclear safety requirements and finalize procedures for recording, tracking, and analyzing reported noncompliances.	Monitor site noncompliance with nuclear safety requirements as reported in the noncompliance reporting system and finalize procedures for recording, tracking, and analyzing reported noncompliances.
	Continued Price Anderson Amendments Act (PAAA) investigations consistent with procedures in the DOE Investigation Manual and the DOE Enforcement manual.	Monitor noncompliances, conduct PAAA investigations, initiate enforcement actions, and adjudicate contested cases as appropriate. Establish a Docketing Clerk Office to receive and control regulatory/enforcement information.	Monitor noncompliances, conduct PAAA investigations, initiate enforcement actions, and adjudicate contested cases as appropriate. Establish a Docketing Clerk Office to receive and control regulatory/enforcement information.
	$ 725	$ 800	$ 1,135
Nuclear Safety Operations	Identified and matched individual training requirements with federal and private sector curriculum and tracked progress toward meeting both individual development and professional qualification requirements. Scheduled training as appropriate.	Utilizing uncosted balances to supplement FY 1995 funds, update Individual Development and Technical Qualification Plans. Determine training to ensure that staff are highly qualified and fully trained to conduct safety assessments, evaluations, reviews and audits of technically diverse and complex nuclear facilities.	Update Individual Development Plans and Technical Qualification Plans. Determine appropriate training to ensure that staff are highly qualified and fully trained to conduct safety assessments, evaluations, reviews and audits of technically diverse and complex nuclear facilities.

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III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Safety Operations (Cont'd)	Operated an Information Center to collect and disseminate in a timely manner the necessary nuclear safety data and documentation for the staff to perform their duties.	Utilizing uncosted balances to supplement FY 1995 funds, continue operation of the Information Center to collect and disseminate in a timely manner the necessary nuclear safety data and documentation for the staff to perform their duties.	Continue operation of the Information Center to collect and disseminate in a timely manner nuclear safety data and documentation necessary for the staff to perform their duties.
	Provided information management support through the use of a PC-based interactive video training capability, the use of nuclear information compiled on compact discs, an electronic bulletin board and an office-wide calendar. Assisted staff in the development of project plans.	Utilizing uncosted balances, prepare periodic reports on Nuclear Safety, publish newsletters highlighting forthcoming meetings and events, update the Executive Correspondence Tracking System and assist staff in developing project plans and schedules.	Prepare periodic reports on Nuclear Safety, publish newsletters highlighting forthcoming meetings and events, update the Executive Correspondence Tracking System, and assist staff in developing project plans and schedules.
	Developed budgets, allocated resources consistent with Congressional intent, prepared contractual instruments, monitored contractor performance, performed internal controls and audits, prepared financial reports, processed training and travel requests, and ensured that Nuclear Safety activities complied with DOE security requirements.	Utilizing uncosted balances to supplement FY 1995 funds, continue developing budgets, allocating resources consistent with Congressional intent, preparing contractual instruments, monitoring contractor performance, performing internal controls and audits, preparing financial reports, processing training and travel requests, and ensuring that Nuclear Safety activities comply with DOE security requirements.	Continue developing budgets, allocating resources consistent with Congressional intent, preparing contractual instruments, monitoring contractor performance, performing internal controls and audits, preparing financial reports, processing training and travel requests, and ensuring that Nuclear Safety activities comply with DOE security requirements.
	$ 3,273	$ 1,705	$ 2,310

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Special Secretarial Nuclear Safety Initiatives	Participated on the Interagency Nuclear Safety Review Panel (INSRP) which provides the President with an independent assessment of the risks associated with launching a nuclear power source into space. The INSRP consists of a coordinator from DOE, NASA and DOD who direct the activities of about 50 national experts in evaluating the potential hazards and risks associated with each launch and preparing a sound and technically defensible safety evaluation report.	Participate in the activities of INSRP which include preparing letter reports on outstanding safety issues for launching nuclear power sources into space that include technical issues relevant to the Cassini mission, and technical issues on the safety assessment of the Topaz II mission. Prepare an annual report on all INSRP activities.	Participate in the activities of INSRP which include a review of the Preliminary Safety Analysis Report and the Environmental Impact Statement for the Cassini mission, a review of safety documentation for the Mars Discoverer mission, and the preparation of an annual report on all INSRP activities.
	Performed independent safety oversight of 3 DOD nuclear reactor operations that are not under the cognizance of the Naval Reactors Program.	Perform safety assessments of each of the 3 DOD reactors to ensure that they are operating in accordance with published nuclear safety principles and prepare a letter report on each assessment.	Perform safety assessments of each of the 3 DOD reactors to ensure that they are operating in accordance with published nuclear safety principles and prepare a letter report on each assessment.
	Provided nuclear safety oversight of the transition of the gaseous diffusion plants from DOE to a government corporation regulated by the Nuclear Regulatory Commission.	Perform safety assessments of the Gaseous Diffusion Plants at Portsmouth and Paducah to ensure the plants are operating safely during the transition period and prepare a report on each assessment.	Plants transferred, no activity.
	Concluded vulnerability assessments of DOE spent fuel storage facilities and prepared a summary report of the findings and conclusions.	Conduct special studies of ES&H issues arising from the vulnerability assessments.	Review corrective actions to remediate spent fuel vulnerabilities to ensure the safety of DOE workers and the public.
	Initiated vulnerability assessments of the disposition of plutonium.	Conduct special studies of ES&H issues arising from the vulnerability assessments.	Review corrective actions to remediate vulnerabilities associated with the disposition of plutonium.
	No Activity.	No Activity	Review corrective actions to remediate issues resulting from a Highly Enriched Uranium Study.
	$ 2,750	$ 1,250	$ 1,350

III. Nuclear Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Federal and Contractual Support	Funded salaries and benefits of Federal staff to perform Nuclear Safety Oversight activities.	Fund salaries and benefits of Federal staff to perform continuation of Nuclear Safety Oversight activities and miscellaneous costs such as DOE library support, printing, AOSS support, etc.	Fund salaries and benefits of Federal staff to perform continuation of Nuclear Safety Oversight activities and miscellaneous costs such as DOE library support, printing, AOSS support, etc.
	Funding by Object Class:	Funding by Object Class:	Funding by Object Class:
	Personnel Compensation $5,661	Personnel Compensation..... $6,324	Personnel Comp..... $6,594
	Benefits..... 1,246	Benefits..... 1,400	Benefits..... 1,450
	Travel..... 855	Travel..... 1,000	Travel..... 1,200
	Training..... 135	Training..... 100	Training..... 200
	Miscellaneous Admin..... 1,948	Miscellaneous Admin..... 1,260	Misc Admin..... 1,550
	73.0 FTE $ 9,845	73.0 FTE $ 10,084	73.0 FTE $ 10,994
Capital Equipment	Purchased equipment to support information and communications systems.	Provide for the purchase of equipment to support the Office of Environment, Safety and Health.	Provide for the purchase of equipment to support the Office of Environment, Safety and Health.
	$ 50	$ 50	$ 50
Subtotal, Program Direction	73.0 FTE $ 9,895	73.0 FTE $ 10,134	73.0 FTE $ 11,044
Use of Prior Year Balances	$ 0	-$ 5,000	$ 0
Nuclear Safety	73.0 FTE $ 24,903	73.0 FTE $ 16,679	73.0 FTE $ 24,679

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES

OVERVIEW

WORKER AND COMMUNITY TRANSITION

In accordance with Section 3161 of the National Defense Authorization Act of 1993 and as a result of a change in the work force at Defense Nuclear Facilities, defense employees of the Department of Energy may be provided various options to minimize the impacts of these changes. These options include retraining, early retirement incentives, preferences in hiring, outplacement assistance (including continuation of health benefits), other voluntary separations, and relocation assistance. In addition, the Department may provide local impact assistance for community economic development. This budget provides for the development and implementation of plans to assist defense workers and their communities that are adversely impacted by reduced or curtailed mission responsibilities funded by Atomic Energy Defense Activities. Since FY 1995, this program also has funded contractor employment reduction requirements for severance and separation payments that were budgeted under Weapons Program Direction in FY 1994.

Performance measures for this program include the number of reductions achieved through means other than layoffs; the number of employees retrained for new jobs; whether communities surrounding DOE facilities can successfully convert those facilities and their attendant equipment, technology and personnel to the private sector; and the economic conditions in communities surrounding Department of Energy facilities.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Worker and Community Transition

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Worker and Community Transition					
Operating Expenses	$ 200,000	$ 115,000	$ 0	$ 115,000	$ 100,000
Adjustment	0	0	0	0	0
TOTAL	$ 200,000 a/	$ 115,000	$ 0	$ 115,000	$ 100,000
Summary					
Operating Expenses	$ 200,000	$ 115,000	$ 0	$ 115,000	$ 100,000
Total Program	$ 200,000	$ 115,000	$ 0	$ 115,000	$ 100,000
Staffing (FTEs)	0	18	0	18	18

a/ FY 1994 appropriation $100,000,000. For comparability purposes, includes $100,000,000 from the Weapons Program Direction Decision Unit, Weapons Activities appropriation.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Worker and Community Transition

FY 1995 Appropriation	$ 115,000
- Adjustment -	0
FY 1995 Adjusted	$ 115,000
- Transfer -	0
FY 1995 Comparable	$ 115,000
Worker and Community Transition	
- Worker and Community Transition -	-15,000
FY 1996 CONGRESSIONAL Budget Request	$ 100,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

WORKER AND COMMUNITY TRANSITION

I. Preface: Worker and Community Transition

In accordance with Section 3161 of the National Defense Authorization Act of 1993 and as a result of a change in the work force at Defense Nuclear Facilities, defense employees of the Department of Energy may be provided various options to minimize impacts of these changes. These options include retraining, early retirement incentives, preferences in hiring, outplacement assistance (including continuation of health benefits), other voluntary separations, and relocation assistance. In addition, the Department may provide local impact assistance for community economic development. This budget provides for the development and implementation of plans to assist defense workers and their communities that are adversely impacted by reduced or curtailed mission responsibilities funded by Atomic Energy Defense Activities.

II. A. Summary Table: Worker and Community Transition

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Worker and Community Transition.....	$ 200,000	$ 115,000	$ 100,000	$ -15,000
Total, Worker and Community Transition	$ 200,000	$ 115,000	$ 100,000	$ -15,000

II. B. Laboratory and Facility Funding Table: Worker and Community Transition

All Other	$ 200,000	$ 115,000	$ 100,000	$ -15,000
Total, Worker and Community Transition	$ 200,000	$ 115,000	$ 100,000	$ -15,000

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Worker and Community Transition	In accordance with the objectives of Section 3161 of the National Defense Authorization Act of 1993, work force restructuring plans are being developed to assure that workers displaced because of curtailed defense mission responsibilities are provided assistance. The plans address specific sites affected by work force restructuring due to the reconfiguration of the weapons complex, or reduced mission objectives. Workers were provided a 120 day notice in advance of work force restructuring, and the plans were published within 90 days of the restructuring notice. The plans address the specific objectives in Section 3161 to minimize impacts on displaced workers such as: retirement incentives; retraining; preference in hiring at other DOE facilities; and relocation assistance. The plans were developed in consultation with stakeholders at both the national and local levels. Post-employment training and other services for workers who can not transition to other DOE jobs were supported as well as community efforts to minimize the impacts to the local economy. In this fiscal year $200,000 million was provided for these activities; $100,000 million was provided under Weapons activities and $100,000 million under Materials Support and Other Defense Programs.	In FY 1995, the development, update, and implementation of economic conversion and work force restructuring plans will continue, with increasing emphasis on economic development aimed at replacing lost DOE jobs and making other contributions to the local community. This budget will support options to minimize layoffs including retraining, early retirement and voluntary separation incentives. Options will also be offered in hiring and relocation of displaced workers including preference in hiring and relocation assistance, retraining, and outplacement support. Local community impact assistance will be provided through support of community planning of economic development, and funding of economic development proposals.	This budget will support options to minimize layoffs including retraining early retirement and voluntary separation incentives. Options will also be offered in hiring and relocation of displaced workers including preference in hiring and relocation assistance, retraining, and outplacement support. Local community impact assistance may be provided through support of community planning of economic development, and funding of economic development proposals with priority given to those which will re-employ displaced DOE workers. EM also will allocate up to $200 million to provide for worker retraining activities, utilizing savings derived from contractor workforce reductions of up to 12,000 employees in the FY 1995/FY 1996 timeframe.

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III. Worker and Community Transition (Cont'd):

Program Activity		FY 1994	FY 1995	FY 1996
Worker and Community Transition (Cont'd)	Funding by Object Class:			
	Salaries/Personnel Compensation	$ 0	$ 1,514	$ 1,605
	Benefits	0	393	416
	Travel	0	200	300
	Contractual Services	0	112,893	97,679
	Total	$ 0	$115,000	$100,000
	No Activity		Provides program management, direction, and support of these activities related to accomplishing the programmatic oversight of the Worker and Community Transition Program.	Continues the program management, direction, and support of these activities related to accomplishing the programmatic oversight of the Worker and Community Transition Program.
			18.0 FTE	18.0 FTE
		$ 200,000	$ 115,000	$ 100,000
Worker and Community Transition		$ 200,000	18.0 FTE $ 115,000	18.0 FTE $ 100,000

OVERVIEW

OFFICE OF FISSILE MATERIALS DISPOSITION

PROGRAM MISSION

This program is responsible for the Department's technical and management activities to assess, plan and direct the implementation of efforts necessary to provide for the safe, secure, environmentally sound long-term storage of all weapons-usable fissile materials and the disposition of fissile materials declared surplus to national defense needs. Program efforts include completion of a Programmatic Environmental Impact Statement and technical and economic analyses regarding long-term storage and disposition of weapons-usable fissile materials, primarily plutonium and highly enriched uranium. The Program's technical and management efforts also include coordination with the United States Enrichment Corporation and U.S. industry to implement actions to disposition surplus, weapons-usable highly enriched uranium by blending it down to low enriched uranium for use as commercial reactor fuel. This would result in reducing stockpiles of surplus fissile materials while also returning significant financial benefits to the U.S. Treasury. The efforts of this Program will directly contribute to advancing U.S. and global nonproliferation interests involving Russia and other nations and improve the cost-effectiveness of the Department's management of stockpiles of surplus fissile materials.

OVERVIEW & ADMINISTRATION POLICY

In the aftermath of the Cold War, significant quantities of weapons-usable fissile materials (primarily plutonium and highly enriched uranium) have become surplus to national defense needs both in the United States and Russia. These stocks of fissile materials pose significant dangers to national and international security. The dangers exist not only in the potential proliferation of nuclear weapons but also in the potential for environmental, safety and health consequences if surplus fissile materials are not properly managed.

In September 1993, President Clinton announced the establishment of a framework for U.S. efforts to prevent the proliferation of weapons of mass destruction. This policy commits the United States to undertake a comprehensive approach to the growing accumulation of fissile materials from dismantled nuclear weapons. As key elements of the President's policy, the United States will:

Seek to eliminate, where possible, accumulation of stockpiles of highly enriched uranium or plutonium, and to ensure that where these materials already exist they are subject to the highest standards of safety, security, and international accountability.

Pursue the purchase of highly-enriched uranium from the former Soviet Union and other countries and its conversion to peaceful use as reactor fuel.

Initiate a comprehensive review of long-term options for plutonium disposition, taking into account technical, nonproliferation, environmental, budgetary and economic considerations. Russia and other nations with relevant interests and experience will be invited to participate in the study.

The Department's Office of Fissile Materials Disposition directly contributes to each of these efforts and serves as the Department's representative to the President's Interagency Working Group addressing domestic and bilateral efforts for disposition of surplus, weapons-usable plutonium.

Performance will be measured by the thoroughness and timely completion of the draft and final PEIS and the associated technical, cost and schedule analyses. An additional key performance indicator will be the completion and submission to the U.S.-Russian Summit Working Group, technical team reports on disposition and storage alternatives for plutonium. Performance indicators also include the quantities of surplus highly enriched uranium and other surplus uranium materials that will be in the process of conversion to peaceful use as reactor fuel.

ROLE OF THE DEPARTMENT OF ENERGY'S OFFICE OF FISSILE MATERIALS DISPOSITION

Permanently established by Congress in October, 1994, The Department's Office of Fissile Materials Dispostion Leads the Department's efforts to develop recommendations and direct the implementation of decisions for providing safe, secure, and environmentally sound long-term storage of all weapons-usable fissile materials, and for disposing of weapons-usable fissile materials declared surplus to national security needs by the President.

The Program directs the analysis of technologies and development of a programmatic environmental impact statement (PEIS) on the long term storage and disposition of surplus, weapons usable fissile materials. The results of the environmental analysis in the PEIS combined with information from technical and economic studies and national policy objectives will form the basis for a Record of Decision (ROD) expected in 1996 regarding which long term storage and disposition options the Department recommends be employed.

The decision to implement these options will involve numerous considerations including technical, economic, nonproliferation, environmental, international, and national policy and security considerations. A decision to commence implementation of surplus plutonium disposition will be made in a broad domestic and international context, involve other Executive branch agencies, and will ultimately reside with the President. The Department's technical efforts and analysis and its Record of Decision will provide the essential foundation to afford the President the flexibility to implement plutonium disposition options either multilaterally or bilaterally through negotiations or unilaterally as an example to other nations.

Subsequent to the Record of Decision, a program of research and development, technology verification, and engineering design will be conducted to enable prompt and effective implementation of the fissile materials storage and disposition decisions as directed.

This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Office of Fissile Materials Disposition

Activity	FY 1994 Adjusted	FY 1995 Appropriation a/	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Long-Term Storage Options					
Operating Expenses	$ 17,350	$ 1,975	$ 0	$ 1,975	$ 10,880
Capital Equipment	0	0	0	0	0
Construction	0	0	0	0	0
Subtotal, Long-Term Storage Options	$ 17,350 b/	$ 1,975	$ 0	$ 1,975	$ 10,880
Disposition Options					
Operating Expenses	$ 6,988	$ 17,970	$ 0	$ 17,970	$ 21,235
Capital Equipment	0	0	0	0	500
Construction	0	0	0	0	0
Subtotal, Disposition Options	$ 6,988	$ 17,970	$ 0	$ 17,970	$ 21,735
Technical Integration, Support & Associated Technologies					
Operating Expenses	$ 2,835	$ 13,825	$ 0	$ 13,825	$ 19,725
Capital Equipment	0	0	0	0	0
Subtotal, Technical Integration, Support & Associated Technologies	$ 2,835	$ 13,825	$ 0	$ 13,825	$ 19,725
NEPA Compliance					
Operating Expenses	$ 2,360	$ 11,550	$ 0	$ 11,550	$ 9,000
Program Management					
Operating Expenses	$ 4,167	$ 2,680	$ 0	$ 2,680	$ 6,660
Pantex Safety Studies					
Operating Expenses	$ 0	$ 2,000	$ 0	$ 2,000	$ 2,000
TOTAL	$ 33,700	$ 50,000	$ 0	$ 50,000	$ 70,000

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LEAD TABLE - Office of Fissile Materials Disposition (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation a/	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses	$ 33,700	$ 50,000	$ 0	$ 50,000	$ 69,500
Capital Equipment	0	0	0	0	500
Construction	0	0	0	0	0
Total Program	$ 33,700	$ 50,000 c/	$ 0 c/	$ 50,000	$ 70,000 c/
Staffing (FTEs)	0 d/	20 d/	0	20	30

a/ Reflects the results of Congressional action to establish a new line-item for the Department's Office of Fissile Materials Disposition activities. Prior to FY 1995, these activities were funded primarily under Weapons Complex Reconfiguration. Planned carryover of some FY94 funds supports FY95 program activities in long-term storage and NEPA compliance areas.

b/ Includes $4.0 for the Department's Plutonium Vulnerability Assessment. Carryover of funds was planned to support long-term storage design work into FY95.

c/ Key program efforts within the following activities will be accomplished through the Plutonium Resource Center in Amarillo, Texas:

	($ in Thousands) FY95	FY96
Long-Term Storage Options	750	1300
Disposition Options	2800	2200
Technical Integration, Support, and Associated Technologies	2150	1950
Program Management	1300	2550
Pantex Safety Studies	2000	2000
TOTAL	9000	10000

d/ Prior to Congressional action to create a line-item organization in FY 1995 to address fissile materials disposition, line organizations budgeted for FTE's, i.e., salaries and benefits, in their respective budget requests. The Department's initial staffing allotment for this effort was 20 FTE's in FY95.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Office of Fissile Materials Disposition

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Los Alamos National Laboratory	$ 230	$ 5,658	$ 0	$ 5,658	$ 7,430
Sandia National Laboratories	25	5,500	0	5,500	6,450
Albuquerque Operations Office	0	9,000	0	9,000	10,100
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 255	$ 20,158	$ 0	$ 20,158	$ 23,980
CHICAGO OPERATIONS OFFICE					
Chicago Operations Office	$ 0	$ 0	$ 0	$ 0	$ 100
Argonne National Lab (West)	0	325	0	325	325
Subtotal, CHICAGO OPERATIONS OFFICE	$ 0	$ 325	$ 0	$ 325	$ 425
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 0	$ 334	$ 0	$ 334	$ 150
Idaho Operations Office	0	0	0	0	100
Subtotal, IDAHO OPERATIONS OFFICE	$ 0	$ 334	$ 0	$ 334	$ 250
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 0	$ 0	$ 0	$ 0	$ 100
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 750	$ 3,560	$ 0	$ 3,560	$ 3,185
ROCKY FLATS OFFICE					
Rocky Flats Plant	$ 0	$ 125	$ 0	$ 125	$ 125
Rocky Flats Office	325	20	0	20	120
Subtotal, ROCKY FLATS OFFICE	$ 325	$ 145	$ 0	$ 145	$ 245
RICHLAND OPERATIONS OFFICE					
Richland Operations Office	$ 0	$ 0	$ 0	$ 0	$ 100

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FIELD OFFICE FUNDING BY SITE - Office of Fissile Materials Disposition (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Hanford Site	70	80	0	80	80
Pacific Northwest Lab	0	80	0	80	80
Subtotal, RICHLAND OPERATIONS OFFICE	$ 70	$ 160	$ 0	$ 160	$ 260
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 75	$ 6,108	$ 0	$ 6,108	$ 7,365
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Site	$ 125	$ 45	$ 0	$ 45	$ 45
Savannah River Operations Office	0	925	0	925	1,300
Subtotal, SAVANNAH RIVER OPERATIONS OFFICE	$ 125	$ 970	$ 0	$ 970	$ 1,345
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 15,340	$ 4,250	$ 0	$ 4,250	$ 19,885
Yucca Mountain Project Office	340	1,060	0	1,060	550
Subtotal, WASHINGTON HEADQUARTERS	$ 15,680	$ 5,310	$ 0	$ 5,310	$ 20,435
ALL OTHER	$ 16,420	$ 12,930	$ 0	$ 12,930	$ 12,410
TOTAL	$ 33,700	$ 50,000	$ 0	$ 50,000	$ 70,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Office of Fissile Materials Disposition

FY 1995 Appropriation	$ 50,000
- Adjustment - NOTE: The $9.0 million requested as part of the Department's FY 1995 budget amendment to support the Plutonium Resource Center is incorporated within the various activity areas in the Program's FY 1995 budget	0
FY 1995 Adjusted	$ 50,000
- Transfer -	0
FY 1995 Comparable	$ 50,000
Long-Term Storage Options	
- Long-Term Storage Options - Provide funds to begin conceptual design(s) of plutonium storage and increase level of effort to establish storage requirements of other materials (+$8,905,000).	+8,905
Disposition Options	
- Disposition Options - Begin engineering and design activities for disposition technology(ies) selected in the ROD. Disposition technology(ies) will be selected based on an assessment of effort needed to advance the most viable options. Complete efforts to enable blending and conversion to peaceful use as reactor fuel surplus HEU, including foreign (Kazakhstan) HEU obtained under Project Sapphire (+$3,765,000).	+3,765
Technical Integration, Support & Associated Technologies	
- Technical Integration, Support & Associated Technologies - Provide increased funding to support Program-wide technical integration activities (+$965,000). Increased support for common technologies / analyses consistent with the ROD and begin conceptual designs of plutonium stabilization, disassembly and conversion (+$5,785,000). Discontinue plutonium handling and packaging training (-$850,000).	+5,900

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SUMMARY OF CHANGES - Office of Fissile Materials Disposition (cont'd)

NEPA Compliance

- NEPA Compliance - Complete preparation of draft PEIS, conduct public hearings, complete preparation of final PEIS and support Record of Decision (ROD). Fewer funds required since PEIS process will be completed before the end of fiscal year 1996 (-$2,550,000). . . . . -2,550

Program Management

- Program Management - Provide funds for 30 FTEs.

  NOTE: Line organizations budgeted for these FTEs in their FY 1995 request and therefore funds were not requested by this Program. . . . . +3,980

FY 1996 CONGRESSIONAL Budget Request . . . . . $ 70,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

OFFICE OF FISSILE MATERIALS DISPOSITION

I. Preface: Long-Term Storage Options

Work in the evaluation of long-term storage options includes the preparation and evaluation of facility designs for long-term storage of plutonium, highly-enriched uranium and U233/minor actinides in order to meet the stored weapons standard for these materials and to fully comply with current ES&H standards. Storage facility options include using the existing storage facilities, upgrading the existing facilities where these materials are currently stored, or designing and/or constructing new consolidated storage facility(s). Site specific design and analysis efforts, as appropriate, would follow in fiscal year 1997 and outyears.

II. A. Summary Table: Long-Term Storage Options

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Long-Term Storage Options	$ 17,350	$ 1,975	$ 10,880	$ 8,905
Total, Long-Term Storage Options	$ 17,350	$ 1,975	$ 10,880	$ 8,905

II. B. Laboratory and Facility Funding Table: Long-Term Storage Options

Lawrence Livermore National Lab	$ 75	$ 115	$ 220	$ 105
Los Alamos National Laboratory	230	150	245	95
Oak Ridge Operations Office	750	320	520	200
Rocky Flats Office	325	20	20	0
Sandia National Laboratories	25	25	25	0
Washington Headquarters	15,340	500	8,455	7,955
Savannah River Site	125	45	45	0
Idaho National Engineering Lab	0	50	50	0
Albuquerque Operations Office	0	750	1,300	550
All Other	480	0	0	0
Total, Long-Term Storage Options	$ 17,350	$ 1,975	$ 10,880	$ 8,905

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Long-Term Storage Options	Initiated designs for long-term storage of plutonium, highly enriched uranium, and minor actinides. Initiated designs included new facilities and upgrades of existing facilities at DOE site. Provided laboratory and site support to storage option(s) design activities. Funds supported the initiation and completion of Department-wide plutonium vulnerability assessment. Assessment identified and prioritized environment, safety & health (ES&H) vulnerabilities arising from the condition of the Department's current plutonium inventory holdings. The final report provides an information base for identifying corrective actions to place the material in safe interim-storage.	Complete engineering, design, cost estimate development and schedule and environmental analysis of long-term storage options. This activity funded by Weapons Complex Reconfiguration Program prior-year carryover. ($6,270) Complete laboratory and site support to long-term storage option(s) design activities.	Begin conceptual design activities for upgraded and new plutonium and uranium long-term storage options selected in the ROD. Continue analysis and studies for long-term storage of other materials.
	$ 17,350	$ 1,975	$ 10,880
Long-Term Storage Options	$ 17,350	$ 1,975	$ 10,880

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

OFFICE OF FISSILE MATERIALS DISPOSITION

I. Preface: Disposition Options

The alternatives for disposition of plutonium and certain other surplus weapons-usable fissile materials are focussed on meeting the spent fuel standard. The spent fuel standard implies that the plutonium is no more accessible for weapons use than the plutonium in spent nuclear fuel from commercial reactors.

Surplus highly enriched uranium (HEU) can be made non-weapons usable by blending it down with natural or other assays of uranium into low enriched uranium (LEU) suitable for commercial reactor fuel. The use of this material as a reactor fuel will result in economic benefits and offset costs associated with implementing this alternative.

The FY 96 efforts will result in completion of technical, cost and schedule, analyses of candidate disposition alternatives. This will enable implementation of research and development and engineering and design of selected dispositon options in FY 97 following the Record of Decision.

II. A. Summary Table: Disposition Options

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Disposition Options	$ 6,988	$ 17,970	$ 21,735	$ 3,765
Total, Disposition Options	$ 6,988	$ 17,970	$ 21,735	$ 3,765

II. B. Laboratory and Facility Funding Table: Disposition Options

Lawrence Livermore National Lab	$ 0	$ 3,875	$ 3,760	$ -115
Oak Ridge Operations Office	0	2,565	1,915	-650
Rocky Flats Plant	0	125	125	0
Hanford Site	0	80	80	0
Los Alamos National Laboratory	0	2,285	2,555	270
Pacific Northwest Lab	0	80	80	0
Savannah River Operations Office	0	925	1,200	275
Idaho National Engineering Lab	0	100	100	0
Argonne National Lab (West)	0	325	325	0
Yucca Mountain Project Office	0	1,060	550	-510
Washington Headquarters	0	3,750	8,845	5,095
Albuquerque Operations Office	0	2,800	2,200	-600
All Other	6,988	0	0	0
Total, Disposition Options	$ 6,988	$ 17,970	$ 21,735	$ 3,765

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Disposition Options	Continued the assessment of technical, economic, environmental, and policy considerations of the existing and advanced reactor concepts utilizing to the maximum extent possible existing studies prepared by other programs. Began developing PEIS technical input for evaluation of all reasonable disposition alternatives. Began evaluation of feasibility and determination of cost and schedule for reasonable disposition alternatives including reactor, immobilization, and geologic options. Began evaluating options for the fabrication of nuclear fuels required for reactor-based disposition options selected for study.	Continue assessment of technical, economic, environmental, and policy considerations of the existing and advanced reactor concepts utilizing, to the maximum extent possible, existing studies prepared by other programs. Continue developing reference nuclear fuel fabrication processes for nuclear reactor options selected through the screening process. Continue developing PEIS technical input for evaluation of all reasonable disposition alternatives. Continue evaluation of feasibility and determination of cost and schedule for reasonable disposition alternatives including reactor, immobilization, and geologic options. Begin developing an HEU and U233/minor actinides disposition plan. This plan will prioritize resources and establish program methodologies. Begin development of an HEU baseline inventory document. Define and begin development of a baseline inventory document for weapons-usable minor isotopes. Complete analysis and studies of destruction options for plutonium. Support environmental assessment and disposition of HEU materials including blending of weapons-usable HEU obtained from the Government of Kazakhstan under Project Sapphire.	Complete technical, economic, engineering, and environmental studies and documents to support the PEIS and ROD. Continue research and development of immobilization technologies. Complete developing reference nuclear fuel fabrication processes for nuclear reactor options. Begin engineering and design activities for disposition technologies selected in the ROD. Begin research and development for disposition technologies selected for further evaluation based on the ROD. Complete development of PEIS technical input. Complete evaluation of the feasibility and costs and schedule for reasonable alternatives. Continue technical and industrial support to enable blending of HEU and conversion to peaceful use as reactor fuel.

III. Disposition Options (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Disposition Options (Cont'd)			Continue detailed systems planning for other materials disposition.
	$ 6,988	$ 17,970	$ 21,735
Disposition Options	$ 6,988	$ 17,970	$ 21,735

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
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KEY ACTIVITY SUMMARY

OFFICE OF FISSILE MATERIALS DISPOSITION

I. Preface: Technical Integration, Support & Associated Technologies

This work encompasses technical project coordination and oversight, technical analyses, modeling, and systems engineering, support of the public outreach activities, agency/interagency coordination, and project control. A major portion of this work includes studies, analyses, research and development of technologies common to and supportive of storage and disposition options, including plutonium stabilization, pit disassembly, and conversion. This effort also supports the decision analysis and criteria process, and the systems analysis necessary to accomplish the decision option evaluation and selection process for the Record of Decision (ROD).

II. A. Summary Table: Technical Integration, Support & Associated Technologies

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Technical Integration, Support & Associated Technologies	$ 2,835	$ 13,825	$ 19,725	$ 5,900
Total, Technical Integration, Support & Associated Technologies	$ 2,835	$ 13,825	$ 19,725	$ 5,900

II. B. Laboratory and Facility Funding Table: Technical Integration, Support & Associated Technologies

Lawrence Livermore National Lab	$ 0	$ 2,118	$ 3,285	$ 1,167
Los Alamos National Laboratory	0	3,223	4,530	1,307
Sandia National Laboratories	0	5,475	6,425	950
Oak Ridge Operations Office	0	675	650	-25
Washington Headquarters	0	0	2,385	2,385
Albuquerque Operations Office	0	2,150	1,950	-200
Idaho National Engineering Lab	0	184	0	-184
All Other	2,835	0	500	500
Total, Technical Integration, Support & Associated Technologies	$ 2,835	$ 13,825	$ 19,725	$ 5,900

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Technical Integration, Support & Associated Technologies	Began preliminary screening of alternatives for disposition including reactor, immobilization and geologic disposal.	Complete the final options screening criteria. Perform modeling and systems analysis. Begin the development of a multi-attribute analysis utility tool to support the decision analysis process leading to ROD.	Complete systems and decision analysis to support a recommendation for a Record of Decision (ROD). Complete all decision records and documentation supporting ROD.
	Began coordinating, integrating and overseeing technical activities being performed by participating DOE laboratoris and sites. Began development of baseline technical information library. Developed Program Integration and Systems Engineering Management Plans, Technical Requirements and Interface Control Documents.	Continue coordination and integration of technical activities being performed by participating DOE laboratories and sites. Complete development of the baseline technical information library. Begin tracking reserch and analyses to ensure no redundancy exists between participating labs and sites.	Continue the coordination, integration adn oversight of technical implementation activities being performed by participating DOE laboratories and sites, including selected conceptual design efforts. Continue tracking coordination or research and analyses to ensure technical goals and milestones are being completed without redundancy.
	Began studies and engineering evaluation for crosscutting technical areas such as safeguards and security, transportation & containers, automation & robotics, and to provide pit disassembly and conversion baseline information for the PEIS.	Continue studies and engineering evaluation for crosscutting technical areas such as safeguards and security, transportation & containers, automation & robotics, and pit disassembly and plutonium conversion. Train sites in plutonium handling and packaging.	Complete studies and engineering evaluation for crosscutting technical areas such as safeguards and security, transportation & containers, automation & robotics and pit disassembly and plutonium conversion. Post ROD activities will include implementation support for the ROD recommendations.
	$ 2,835	$ 13,825	$ 19,725
Technical Integration, Support & Associated Technologies	$ 2,835	$ 13,825	$ 19,725

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

OFFICE OF FISSILE MATERIALS DISPOSITION

I. Preface: NEPA Compliance

A Programmatic Environmental Impact Statement (PEIS) is being prepared to address the long-term storage of all weapons-usable fissile materials and the disposition of weapons-usable fissile materials declared surplus to national defense needs. The Record of Decision for the PEIS will identify the approach to be used for long-term storage and the technology(s) which the Department recommends be employed to disposition surplus plutonium. A decision to commence implementation of surplus plutonium disposition will be made in a broad domestic and international context, involve other Executive branch agencies, and will ultimately reside with the President. The Department's technical efforts and analyses and its Record of Decision will provide the essential foundation to afford the President the flexibility to implement fissile materials disposition options either multilaterally or bilaterally through negotiations or unilaterally or as an example to other nations. In addition to the PEIS, the Department will complete other NEPA analyses to support actions associated with surplus fissile materials disposition.

II. A. Summary Table: NEPA Compliance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
NEPA Compliance	$ 2,360	$ 11,550	$ 9,000	$ -2,550
Total, NEPA Compliance	$ 2,360	$ 11,550	$ 9,000	$ -2,550

II. B. Laboratory and Facility Funding Table: NEPA Compliance

Lawrence Livermore National Lab	$ 0	$ 0	$ 100	$ 100
Idaho Operations Office	0	0	100	100
Los Alamos National Laboratory	0	0	100	100
Nevada Operations Office	0	0	100	100
Oak Ridge Operations Office	0	0	100	100
Richland Operations Office	0	0	100	100
Rocky Flats Office	0	0	100	100
Savannah River Operations Office	0	0	100	100
Chicago Operations Office	0	0	200	200
Washington Headquarters	0	0	100	100
Albuquerque Operations Office	0	0	7,800	-3,750
All Other	2,360	11,550		
Total, NEPA Compliance	$ 2,360	$ 11,550	$ 9,000	$ -2,550

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
NEPA Compliance	Prepared and published Notice of Intent (NOI) to Prepare a Programmatic Environmental Impact Statement for Storage and Disposition of Weapons-Usable Fissile Materials in the Federal Register. Facilitated and supported the public participation process for scoping the proposed PEIS including: public comment period, meetings, and workshops.	Complete review of public comments from scoping process and preparation of comment response document. Continue public participation regarding issues and progress of analyses, technical developments, and preparation of the draft PEIS.	Conduct public meetings to solicit public comments on draft PEIS and inform the public regarding implementation of decisions on storage and disposition.
		Based on comments received during the scoping process, prepare and issue the PEIS Implementation Plan. Complete gathering and begin to analyze technical and environmental data. Prepare draft PEIS.	Complete and issue draft and final PEIS for Storage and Disposition of Weapons-usable Fissile Materials. Support preparation and issuance of the Record of Decision (ROD).
	$ 2,360	$ 11,550	$ 9,000
NEPA Compliance	$ 2,360	$ 11,550	$ 9,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

OFFICE OF FISSILE MATERIALS DISPOSITION

I. Preface: Program Management

Program Management & Integration provides funds for the following activity groupings: 1) Program Direction (Federal salaries, benefits, and travel), 2) External Relations (public outreach and education activities), 3) Program Control & Administration (Program cost & schedule control, budget activities, and administrative support), 4) interface with the United States Enrichment Corporation (USEC) and industry for disposition of highly enriched uranium (HEU), and 5) lead for Departmental support to the Interagency Working Group (IWG) and technical task lead for the joint plutonium disposition study with Russian technical experts.

II. A. Summary Table: Program Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Program Management	$ 4,167	$ 2,680	$ 6,660	$ 3,980
Total, Program Management	$ 4,167	$ 2,680	$ 6,660	$ 3,980

II. B. Laboratory and Facility Funding Table: Program Management

Albuquerque Operations Office	$ 0	$ 1,300	$ 2,550	$ 1,250
All Other	4,167	1,380	4,110	2,730
Total, Program Management	$ 4,167	$ 2,680	$ 6,660	$ 3,980

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Management	Funding by Object Class: Salaries * $ -0- Benefits * -0- Travel 500 --- $ 500 * Other line organizations budgeted for Salaries and Benefits for Project FTEs in their FY 1994 requests. Provide travel funds for personnel detailed to the project. Provided funds to initiate project-wide public participation and outreach activities. Provided funds for project cost and schedule control, improved internal Departmental coodination and the ability to work directly with external stakeholders and other federal agencies building consensus for the timely long-term storage and disposition of weapons-usable fissile materials. Provided minimal funding for headquarters technical/ administrative support, e.g., computer, support services contracts, etc. $ 4,167	Funding by Object Class: Salaries * $ -0- Benefits * -0- Travel 500 --- $ 500 * Other line organizations budgeted for Salaries and Benefits for Program FTEs in their FY 1995 requests. Provide travel funds for program personnel. Provide funds for technical/ administrative and analytical support services and continue public participation and outreach efforts to ensure wide dissemination of program information. Continue public outreach efforts. Public outreach achieved through centralized and local public meetings, newsletters, and electronic bulletin board. $ 2,680	Funding by Object Class: Salaries $2,550 Benefits 450 Travel 500 --- $3,500 Provide funds to support 30 Program FTEs required to oversee technical efforts and planning for implementation of ROD recommendations. Continue technical/administrative and analytical support services at last year's level and continue the public participation and outreach efforts to disseminate program information. Continue public outreach efforts. 30.0 FTE $ 6,660
Program Management	$ 4,167	$ 2,680	30.0 FTE $ 6,660

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

OFFICE OF FISSILE MATERIALS DISPOSITION

I. Preface: Pantex Safety Studies

Provide scientific and technical information on issues relating to storage, disposition and potential utilization, and transportation of high explosives and other non-nuclear hazardous materials generated from weapons assembly and disassembly operations.

II. A. Summary Table: Pantex Safety Studies

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Pantex Safety Studies	$ 0	$ 2,000	$ 2,000	$ 0
Total, Pantex Safety Studies	$ 0	$ 2,000	$ 2,000	$ 0

II. B. Laboratory and Facility Funding Table: Pantex Safety Studies

All Other	$ 0	$ 2,000	$ 2,000	$ 0
Total, Pantex Safety Studies	$ 0	$ 2,000	$ 2,000	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Pantex Safety Studies		Provide scientific and technical information on issues relating to storage, disposition and potential utilization, and transportation of high explosives and other non-nuclear hazardous materials generated from weapons assembly and disassembly operations.	Continue efforts to provide scientific and technical information on issues relating to storage, disposition and potential utilization, and transportation of high explosives and other non-nuclear hazardous materials generated from weapons assembly and disassembly operations.
	$ 0	$ 2,000	$ 2,000
Pantex Safety Studies	$ 0	$ 2,000	$ 2,000

OVERVIEW

NAVAL REACTORS

CONSIDERATIONS

Over the past few years, dramatic changes in the world have dictated a fundamental shift in National security policy. While Cold War tensions have ebbed, regional challenges have increased. Consequently, the U.S. Navy's priorities have shifted as well from a Cold War, "blue water" naval strategy to a regional, littoral, and expeditionary focus. Nuclear-powered submarines and aircraft carriers are well-suited to the rapid crisis response necessary under these new conditions.

Also, as a maritime Nation, the U.S. needs an efficient Navy capable of protecting National interests, allies, and sea lanes of communication vital to our economic well-being. For example, annual foreign trade amounts to nearly $1 trillion, with 95% of import/export tonnage transported by ship. Consequently, the Navy will continue to depend on nuclear-powered warships, which account for nearly half of the Navy's combatant fleet.

For over three decades, U.S. nuclear-powered ballistic missile submarines have provided strategic deterrence, countering both Soviet strategic capability and emerging nuclear weapons threats from other nations. They continue to be the most credible and cost-effective leg of the Nation's strategic deterrent. Though the Soviet Union is dissolved, the legacy of their nuclear weapons remains, and proliferation of nuclear weapons and technology around the world continues. As long as nuclear deterrence is a necessity, our highly survivable nuclear-powered ballistic missile submarines will remain critical to National security.

Successive classes of ever more capable nuclear attack submarines have ensured a U.S. advantage over potential adversaries. Because of their stealth, mobility, and firepower, attack submarines are versatile, cost-effective platforms uniquely suited to defend sea lanes, protect carrier battle groups, gather intelligence, reach points of conflict quickly and unobtrusively, provide a presence or "not be there" depending on what policy dictates, and if necessary, engage in offensive operations off an enemy's coast or against inland targets. Nuclear-powered attack submarines will therefore continue to be a key component of Naval expeditionary forces.

Nuclear power provides virtually unlimited high-speed endurance for surface ships without dependence on tankers and their escorts. Nuclear-powered aircraft carriers represent a powerful means of projecting military force without putting forces ashore, becoming more valuable as a tool for diplomacy and influence as the number of U.S. bases and military presence overseas declines. By the end of the decade, nuclear-powered aircraft carriers will predominate the carrier fleet. Nuclear-powered carriers can respond quickly and remain on station for extended periods in forward positions with little logistics support; space normally required for propulsion fuel in oil-fired carriers substantially increases storage capacity for weapons, aircraft fuel and supplies.

OBJECTIVES

The Naval Nuclear Propulsion Program's objectives are to provide the Navy with safe, militarily-effective nuclear propulsion plants in keeping with the Nation's defense requirements, and ensure their continued safe and reliable operation. Absolute responsibility for all aspects of nuclear propulsion is a hallmark of the Program and a key factor in the ongoing success of the nuclear-powered fleet, enabled through the following strategies:

- Maintain an integrated, comprehensive, and far-sighted analytical and developmental effort for existing and future reactor plants;

- Ensure continued technical excellence and high quality in all Naval Nuclear Propulsion Program work;

- Maintain essential excellence in safety and environmental protection necessary to National and world-wide acceptance of U.S. nuclear-powered warship operations;

- Maintain a quality industrial base to provide material, fuel, components, and cores meeting Navy requirements;

- Maximize facility use and stress efficient use of personnel to ensure requirements are met at minimum cost;

- Ensure non-proliferation of Naval nuclear technology.

ACCOMPLISHMENTS

U.S. nuclear-powered ships have steamed over 100 million miles and accumulated 4,400 reactor-years of operation without a single reactor accident, or release of radioactivity having an adverse effect on crews, the public, or the environment. The Program's laboratories and other land-based facilities operate to the same stringent safety, performance, and environmental standards as the fleet. This safety and environmental record has endured over time -- 40 years since the NAUTILUS land-based prototype plant first operated -- and surpasses that of any other nuclear program in the world.

The record results from thorough development, testing, and analysis of cores, components, and systems; stringent quality standards and rigorous training; and detailed analysis and review of operating plants to ensure they perform as expected. The former Soviet Navy's nuclear propulsion safety record offers a stark contrast to the technical excellence of the U.S. program -- they suffered casualties because of poor design, inadequate training, poor quality, and a willingness to take risks with people and equipment the U.S. would not tolerate.

NAVAL REACTORS DEVELOPMENT

Ensuring the safety of and improving operating Naval nuclear reactors are critical factors in maintaining the potency and longevity of existing nuclear-powered warships. Naval nuclear reactor plants must withstand the rigors of operating at sea, subject to a ship's pitching and rolling and the often rapidly changing demand for power, perhaps under battle conditions, unlike commercial nuclear power plants. Reliability and maintainability of nuclear-powered ships is paramount since sailors must live next to the reactor, and they have no one to rely on but themselves should a plant casualty occur at sea. If under the Arctic ice or in a tactical situation, a submarine may not even be able to surface.

The unforgiving nature of operating at sea coupled with the harsh environment within a reactor plant, which subjects components and materials to the detrimental effects of irradiation, corrosion, and high temperature and pressure, necessitates an active, thorough technology effort. As part of this effort, Naval Reactors develops new and improved components and systems to enhance plant performance; monitors the performance of systems, components, materials and plant chemistries; applies knowledge derived from data analyzed to ongoing work; strives to reduce corrosion through development of new chemistries and inspection techniques; and enhances plant performance prediction methods.

Because of the critical nature of nuclear power, testing is a never-ending need. Naval Reactors' testing efforts are extensive and continuous. These test programs constantly evolve as better testing methods are found and new knowledge becomes available.

A far-sighted development effort is essential to ensure our nuclear propulsion technology provides options suitable to meet future threats. Work is integrated as advances in many functional disciplines coalesce into the technological advances applicable to a Naval nuclear plant. The presence of radiation dictates a careful, measured approach to developing nuclear technology, evolving needed components and systems, and packaging these into a reactor plant. Intricate engineering challenges and long lead time to fabricate the massive, complex components require many years before introduction into the fleet.

Work continues on testing the advanced fleet reactor plant for the SEAWOLF Class attack submarine, first scheduled to go to sea in 1996. This plant will be more power-dense and quieter than any previous submarine reactor plant, without a commensurate increase in size or weight. A prototype of the reactor was installed for testing in the existing S8G land-based prototype plant, thus eliminating the multi-billion dollar cost of constructing a new prototype plant.

The advanced fleet reactor is based on 1980's technology; continuing development efforts are yielding greater capabilities. Ongoing efforts in metallurgy, thermal hydraulics, manufacturing and chemical processes, physics, and nuclear design/analysis methods provide the base for future propulsion plant development. Naval Reactors is investigating new structural materials, coolant chemistries, reactor plant arrangements, core configurations, manufacturing techniques, plant and facility monitoring equipment, and heat exchanging methods. Features sought are enhanced power density, longer life, decreased weight, increased resilience, reduced corrosion, ease of operation, and affordability. Major efforts include upgrades to existing components and equipment to help extend operating ship lifetimes, and the next generation reactor and new concept steam generator which are intended for the new attack submarine class to follow SEAWOLF -- including the first true life-of-the-ship core, which obviates the need for expensive refuelings. Developing the reactor plant components and systems for this new submarine involves buying major component test hardware, which Naval Reactors is accommodating within a declining budget through aggressive downsizing measures.

The Program's cost-saving initiatives include shutting down six of eight land-based prototype plants by FY 1996. Though creating a substantial initial cost savings, full realization of savings is dependent on completion of a considerable, multi-year inactivation servicing effort on the shut-down plants.

ENRICHED MATERIALS

While the Department used to produce enriched uranium for use in Naval nuclear fuel, this is no longer necessary due to the reduction in shipbuilding, increasing longevity of nuclear cores, and the availability of enriched uranium from the weapons inventory. Shutting down the Portsmouth High Enrichment Facility and associated activities will result in significant savings -- at their peak, enrichment efforts cost upwards of $120 million annually. (Note: Naval Reactors has budgeting responsibility only, with final funding in FY 1995. The Office of Uranium Programs is responsible for execution of shutdown efforts.)

SUCCESS INDICATORS

The number of cumulative reactor-years of safe operations for all Naval nuclear reactors exceeded 4,400 in FY 1994, and is estimated at over 4,500 in FY 1995 and over 4,600 in FY 1996, demonstrating the Program's continued safety and technical excellence.

The utilization factor for land-based prototype plants, a measure of the prototypes' availability for testing, training, and servicing needs, exceeded 90% in FY 1994, and is estimated to be at least 90% in FY 1995 and 1996.

The number of reactor classes in service is expected to remain steady at nine in FY 1995 and 1996, indicating Naval Reactors' continued ability to support diverse plant types and technologies.

The cumulative percentage of new attack submarine plant work completed is 15% in FY 1994, and is estimated to be 25% in FY 1995 and 40% in FY 1996.

No fines or penalties resulting from environmental inspections by state and federal regulators were assessed in FY 1994 nor are expected to be paid in FY 1995 and 1996, reflecting the continuation of Naval Reactors' outstanding environmental record.

Note: This budget does not reflect FY 1997 funding request levels. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and will be submitted in the near future.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

LEAD TABLE

Naval Reactors

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Naval Reactors Development					
Operating Expenses					
Reactor Development	$ 312,952	$ 348,951	$ 0	$ 348,951	$ 327,851
Plant Development	$ 124,000	$ 146,700	$ 0	$ 146,700	$ 127,000
Reactor Operation and Evaluation	$ 164,630 a/	$ 128,962	$ 0	$ 128,962	$ 135,517
Program Direction	$ 18,300	$ 18,800	$ 0	$ 18,800	$ 19,200
Subtotal, Operating Expenses	$ 619,882	$ 643,413	$ 0	$ 643,413	$ 609,568
Capital Equipment	$ 42,400 b/	$ 28,200	$ 0	$ 28,200	$ 43,000
Construction	$ 17,070 ab/	$ 20,000	$ 0	$ 20,000	$ 29,600
Subtotal, Naval Reactors Development	$ 679,352	$ 691,613	$ 0	$ 691,613	$ 682,168
Enriched Materials					
Operating Expenses	$ 70,000	$ 32,000	$ 0	$ 32,000	$ 0
Total, Naval Reactors	$ 749,352	$ 723,613	$ 0	$ 723,613	$ 682,168
Use of Prior-Year Balances					
for Enriched Materials	0	-32,000	0	-32,000	0
for Naval Reactors Development	0	- 5,000	0	- 5,000	0
Elimination of Prefinancing	0	-11,935	0	-11,935	0
TOTAL	$ 749,352	$ 674,678	$ 0	$ 674,678	$ 682,168

LEAD TABLE - Naval Reactors (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Summary					
Operating Expenses	$ 689,882	$ 675,413	$ 0	$ 675,413	$ 609,568
Capital Equipment	$ 42,400	$ 28,200	$ 0	$ 28,200	$ 43,000
Construction	$ 17,070	$ 20,000	$ 0	$ 20,000	$ 29,600
Total Program	$ 749,352	$ 723,613	$ 0	$ 723,613	$ 682,168
Staffing (FTE's)					
Headquarters	60	60	0	60	60
Field	157	159	0	159	157
Total Staffing	217	219	0	219	217

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"
E.O. 12344 (42 U.S.C. 7158), "Naval Nuclear Propulsion Program"

Notes:
a/ In FY 1994, $1.4M from Reactor Operation & Evaluation and $1.5M from Construction were placed in reserve to fund a proposed $2.9M reprogramming for settlement of a contractor claim on project 81-T-112, Modifications and Additions to Prototype Facilities, which is pending Congressional approval.

b/ FY 1994 amounts for Capital Equipment and General Plant Projects have been reduced by $4.5M and $0.5M, respectively, to reflect a $5M general reduction which was shown in the appropriation as "use of prior-year balances".

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Naval Reactors

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 54,500	$ 45,400	$ 0	$ 45,400	$ 51,000
Idaho Operations Office	800	900	0	900	900
Subtotal, IDAHO OPERATIONS OFFICE	$ 55,300	$ 46,300	$ 0	$ 46,300	$ 51,900
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 70,000	$ 32,000	$ 0	$ 32,000	$ 0
PITTSBURGH NAVAL REACTORS OFFICE					
Pittsburgh Naval Reactors	$ 5,200	$ 5,600	$ 0	$ 5,600	$ 5,800
Bettis Atomic Power Lab	301,652	338,651	0	338,651	324,451
Subtotal, PITTSBURGH NAVAL REACTORS OFFICE	$ 306,852	$ 344,251	$ 0	$ 344,251	$ 330,251
SCHENECTADY NAVAL REACTORS OFFICE					
Knolls Atomic Power Lab	$ 302,700	$ 287,562	$ 0	$ 287,562	$ 285,517
Schenectady Naval Reactors	4,400	4,600	0	4,600	4,800
Subtotal, SCHENECTADY NAVAL REACTORS OFFICE	$ 307,100	$ 292,162	$ 0	$ 292,162	$ 290,317
ALL OTHER	$ 10,100	$ 8,900	$ 0	$ 8,900	$ 9,700
TOTAL	$ 749,352	$ 723,613	$ 0	$ 723,613	$ 682,168

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DEPARTMENT OF ENERGY
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(dollars in thousands)

SUMMARY OF CHANGES

Naval Reactors

FY 1995 Appropriation	$ 723,613
- Adjustment -	$ 0
FY 1995 Adjusted	$ 723,613
Reactor Development - Decreases principally due to progress in designing/fabricating test hardware for the next-generation reactor and associated equipment, for which efforts peak in FY 1995, partially offset by inflation	-21,100
Plant Development - Decreases principally due to progress on the new concept steam generator and new plant instrumentation and control equipment, for which efforts peak in FY 1995, partially offset by inflation	-19,700
Reactor Operation and Evaluation - Increases due to inflation, and increasing inactivation efforts on the prototype plants shut down or being shut down	+ 6,555
Program Direction - Increases due to inflation	+ 400
Capital Equipment - Restores funding level (though still 1/3 less than historical FY 1987-93 levels) necessary to maintain and modernize Program laboratory and testing facilities. FY 1995 was a one-time drastic cutback to help fund new plant test hardware; the FY 1995 level would be untenable for an extended period	+14,800
Construction - Increases due to restart of the Dry Cell project in anticipation of removing the Idaho injunction, and the requirements for the two FY 1995 projects peaking, slightly offset by completion of the Laboratory Facilities Upgrade, and the decreasing needs of the Engineering Services Facility in its final year	+ 9,600
Enriched Materials - Decreases due to completion of funding for shutdown activities at the Portsmouth high enrichment facility	-32,000
FY 1996 Congressional Budget Request	$ 682,168

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NAVAL REACTORS DEVELOPMENT

I. Preface: Reactor Development

Reactor Development aims to ensure the continued safe and reliable operation of the Program's operating reactors and develop future reactors with improved power capabilities, increased endurance, added reliability and greater simplification to provide maximum flexibility for future nuclear-powered ship designs. As the size of the fleet decreases, the demands on each nuclear-powered ship will increase. This work will aid in ensuring the capability of these ships to meet their wide range of missions. By exploiting advances in many areas such as materials, nuclear physics, reactor configuration design, analytical models, and manufacturing and inspection methods, Naval Reactors hopes to enhance the performance of operating reactors and achieve more capable and affordable reactors for future Naval nuclear propulsion plants.

Reactor Development work involves three areas: Materials Development; Nuclear Design and Analysis; and Reactor Technology Development.

MATERIALS DEVELOPMENT work aims at developing, testing, and qualifying materials capable of maintaining their structural and mechanical integrity over long periods of time in a high-temperature and pressure environment subjected to radiation. Dimensionally-stable materials with improved transient and thermal performance and reduced susceptibility to corrosion, wear, and fatigue, provide design options for improved performance or reduced costs. Effort includes high-integrity nuclear fuel, poison, cladding and structural materials for current and new Naval reactors. Materials are analyzed for mechanical and physical properties to assess suitability for use in Naval nuclear reactors. Irradiation testing of material specimens in the Advanced Test Reactor is an important aspect of the qualification process, as is long-term, life-cycle testing in various test facilities and the prototype reactor plants. Materials in use are subjected to continuing testing and analysis to ensure acceptability for continued use, to subject them to advances in testing methods, and confirm accuracy of analytical methods. FY 1996 funding increases primarily for escalation with a small increase in materials testing.

NUCLEAR DESIGN AND ANALYSIS involves designing Naval nuclear reactor cores which capitalize on advances in nuclear physics, calculational methods, materials and manufacturing capabilities -- along with fleet experience -- to optimize power density and fuel use, maximize core life, and maintain safety and protection both in operating plants and in new designs. This effort includes nuclear analyses, physics and criticality work, computational analysis and modelling technique development to optimize reactor design and operation; safety and performance analyses to ensure reactors continue to operate safely and reliably; examination of expended cores to confirm and improve design predictions and operating parameters; and shielding assessment and design to reduce radiation exposure at lower cost and size. A decrease due to progress in advanced fleet reactor work is offset by escalation and continued shielding and physics analysis needed for the next generation reactor.

REACTOR TECHNOLOGY DEVELOPMENT focuses on developing a better understanding of reactor behavior fundamentals; improving and streamlining fabrication processes to achieve cost savings and reduce waste; developing new production techniques to incorporate new materials and processes; and designing new reactors having longer life, enhanced reliability and efficiency characteristics, and greater energy density. Performance improvements are gained through advances in such areas as thermal-hydraulics and structural mechanics, and by optimizing reactor-to-systems interfaces. Improvements are expected to yield submarine cores with greater military utility and sufficient endurance to last the life of a ship without refueling -- a benefit in terms of reduced costs, less waste products generated, and less radiation exposure to shipyard personnel. Computer modelling and analysis work is indispensable to better understand reactor performance and realize optimization in existing as well as future reactors such as the high performance fleet core and the next generation reactor. Promising component designs are fabricated and tested individually, in integrated test assemblies, and as appropriate, in land-based prototype reactor plants. Radiological control efforts and monitoring ensure laboratory development work has no adverse impact on personnel or the environment. Refined manufacturing and quality control techniques often must be developed to realize the performance gains or cost reductions promised by these designs. The decrease for FY 1996 reflects progress in design and testing for the next generation reactor.

II. A. Summary Table: Reactor Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Material Development	$ 96,700	$ 90,300	$ 95,000	$ 4,700
Nuclear Design and Analysis	53,200	53,300	50,000	-3,300
Reactor Technology Development	163,052	205,351	182,851	-22,500
Total, Reactor Development	$ 312,952	$ 348,951	$ 327,851	$ -21,100

II. B. Laboratory and Facility Funding Table: Reactor Development

Bettis Atomic Power Lab	$ 142,252	$ 166,751	$ 176,351	$ 9,600
Idaho National Engineering Lab	53,300	44,000	45,300	1,300
Knolls Atomic Power Lab	116,400	137,300	104,500	-32,800
All Other	1,000	900	1,700	800
Total, Reactor Development	$ 312,952	$ 348,951	$ 327,851	$ -21,100

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Development			
Material Development	Fund Advanced Test Reactor (ATR) effort in support of the Naval Reactors program to irradiate nuclear fuel, poison, cladding and structural materials and qualify them for Naval nuclear reactor applications. Work includes:	------->	------->
	o Operate and maintain the reactor, five test loops (reduced from nine) and associated support systems;	o Operate and maintain the reactor, five test loops and support systems with substantial consolidation of functions to further reduce costs;	o Operate and maintain reactor, test loops and support systems and continue functions consolidation;
	o Complete ATR core internals change-out outage and install instrumentation and control equipment to upgrade ATR for continued use.	o Maximize irradiation time and minimize shutdown time for specimen installation and removal with an equivalent availability of 67%.	o Maintain 67% equivalent availability, minimizing outages to install and remove test specimens.
	Evaluate and test irradiated fuel/poison system, clad and structural materials to obtain data in support of development efforts noted below to improve performance, reliability and safety. Step up yearly number of examinations to reflect testing efficiencies. Work includes:	------->	------->
	o Conduct 4000 examinations of material removed from operating plants to determine cause of failure and evaluate material performance;	o Examine removed operating plant components for effects of irradiation, conducting an additional 4100 material analyses;	o Perform 4200 further material examinations of components removed from operating plants to obtain performance data;
	o Fabricate material specimens and irradiation test them to confirm adequacy of manufacturing process and test design characteristics. Design, build test and evaluate material from 18 test trains.	o Design, build and test 18 test trains containing 50 experiments for irradiation in ATR. Evaluate irradiation data from testing including SCC behavior and clad growth programs.	o Continue testing and evaluation of new and existing materials. Evaluate material from an additional 18 test trains.

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III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Material Development (Cont'd)	Develop and qualify nuclear fuel, poison, cladding and structural materials with improved mechanical and physical traits and increased corrosion resistance to improve plant integrity and plant performance, including:	------->	------->
	o Implement new non-destructive testing (NDT) technology to measure stress corrosion cracking (SCC) growth;	o Develop SCC analytical models to predict component lifetime for materials such as Inconel A600;	o Conduct 10,000 hours of Inconel A600 crack growth rate testing to support component lifetime predictions;
	o Define effect of chemistry and irradiation on SCC behavior of materials;	o Define effect of temperature and stress on SCC behavior of materials;	o Develop predictive models and conduct confirmatory testing to determine factors contributing to SCC;
	o Evaluate zinc primary system coolant additives to decrease SCC of core and structural materials;	o Conduct 7500 hours of laboratory testing of zinc additives;	o Accumulate an additional 7500 hours of laboratory zinc additives testing;
	o Commence evaluation of alternate weld filler material for A690 to reduce production welding costs and increase weld quality;	o Commence development of a laser weld/cutting tool to support development of alternate weld filler material;	o Conduct testing for alternate weld filler material for improved welding of A690;
	o Evaluate and assess cladding specimens with improved corrosion resistance;	o Establish a program to verify corrosion resistance of cladding materials; Evaluate corrosion resistance;	o Verify corrosion database and update to include corrosion rates and resistance; continue evaluation of corrosion resistance;
	o Demonstrate a new fuel manufacturing process with reduced cost and environmental concerns;	o Refine fuel manufacturing process and transfer technology to production vendor;	o Initiate development of an integrated fuel material system to reduce fuel processing costs;
	o Maintain, operate and consolidate material testing and examination facilities;	o Continue consolidation and maintenance of testing and examination facilities;	o Operate maintain and consolidate material testing and examination facilities;
	o Develop and qualify analytical techniques, design models, and predictive capabilities, and convert computer codes as necessary;	o Develop, qualify and use design models like CUBE 3D, continue to convert computer codes and improve predictive capabilities;	o Continue to develop improved analytical techniques and procedures to predict performance of advanced designs;

III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Material Development (Cont'd)	o Evaluate high temperature structural materials and fuel system.	o Develop structural materials and fuel system able to perform under higher temperatures.	o Continue development, testing and evaluation of materials for application in higher temperature reactors; evaluate results of initial testing to determine material feasibility.
	Perform quality engineering functions for manufacturing and testing materials and specimens, including:	------->	------->
	o Conduct audits and appraisals to ensure quality of products;	o Conduct audits and appraisals to ensure quality of products;	o Conduct audits and appraisals to ensure quality of products;
	o Develop improved ultrasonic test (UT) inspection techniques for plant piping hardfaced valve stem and seat inspections;	o Develop improved UT inspection techniques including artificial intelligence and phased array transducer technology;	o Evaluate alternatives for more efficient, less costly UT inspection techniques including optical tracking and robotics;
	o Administer the NDT examiner qualifications program.	o Continue NDT examiner qualification program.	o Continue NDT examiner qualification program.
	$ 96,700	$ 90,300	$ 95,000
Nuclear Design and Analysis	Perform nuclear analyses and physics testing for both operating and advanced design reactors to ensure efficient fuel loading and utilization, maximize core lifetimes and power, and determine optimal operating characteristics. Work includes:	------->	------->
	o Validate physics acceptance test results against performance goals for the advanced fleet reactor prototype (S8G) and shipboard cores;	o Begin operational physics analyses/testing on the advanced fleet reactor prototype core, and predict beginning-of-life physics and criticality parameters for the shipboard reactor;	o Analyze results of beginning-of-life advanced fleet reactor prototype physics testing to demonstrate the core is operating as designed;
	o Conduct end-of-life analysis on the A1W prototype and USS LONG BEACH reactors;	o Develop and conduct physics tests for the S5G prototype at 75% of core life;	o Analyze S5G prototype testing, and update the developmental materials core nuclear analysis model;

III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Design and Analysis (Cont'd)	o Establish reference nuclear design for the next generation reactor core.	o Finalize specifications for the next generation reactor.	o Determine next generation reactor core design power distribution.
	Conduct performance evaluations, safety assessments, and accident analyses to ensure reactors operate safely and reliably throughout their lifetime in a variety of operating conditions; develop simplified shielding for new reactors, refueling/defueling operations, and material storage to maintain the Program's record for minimal personnel radiation exposure. Work includes:	------->	------->
	o Issue the Reactor System Performance Analysis (RSPA) for the lead-ship advanced fleet reactor, and evaluate software for microprocessor-based protection systems;	o Resolve modifications and improvements to advanced fleet reactor protection systems;	o Perform protection and safety analyses necessary for initial operation of SEAWOLF Class ships using the advanced fleet reactor;
	o Extend the S5G prototype RSPA through end-of-life; perform safety and casualty assessments for A1W prototype inactivation;	o Complete safety and protection analyses for S5G prototype end-of-life testing;	o Improve assessments of S6G and S8G;
	o Establish neutron shield design for the next generation reactor; establish shielding requirements for inactivating the S3G prototype.	o Establish shielding requirements for inactivating the A1W-B and S1C prototype reactors.	o Finalize the gamma shield design for the next generation reactor, and shielding requirements for inactivating the S5G and D1G prototypes.
	Examine expended reactor cores and fuel specimens to determine end-of-life characteristics, using observed performance to reduce uncertainty in calculated predictions and therefore provide valuable feedback to improve fleet operations and new core designs; ensure nuclear material shipping, handling and storage operations and facilities maintain outstanding nuclear safety, accountability, and environmental protection, and comply with applicable regulations. Work includes:	------->	------->

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III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Design and Analysis (Cont'd)	o Receive, unload and examine 70% of spent fuel components from the S8G prototype;	o Receive, unload and examine spent fuel from the S3G prototype;	o Receive, unload and examine spent fuel from the S1C prototype; examine remaining components from the S8G prototype;
	o Issue work procedures for decontamination of inactive nuclear material processing areas;	o Issue revisions of fuel handling procedures;	o Simplify accountability and safeguards procedures;
	o Improve utility systems for hot cell and for fuel/waste disposal.	o Develop an improved facility for fuel and waste disposal.	o Continue improving facility for fuel and waste disposal.
	Develop and enhance advanced computer programs for reactor physics and other nuclear design applications, for use in modelling and analyzing operating reactor characteristics and designing new, longer-lived reactors with reduced uncertainties; conduct experiments and analyze results of core examinations and operating experience to validate and improve models. Work includes:	------->	------->
	o Perform detailed measurements of neutron cross sections;	o Complete testing of the advanced fuel assembly in the Full Core Physics Experiment (FCPE) facility, and initiate fuel removal;	o Measure detailed neutron cross sections; complete removal and shipment of fuel from the FCPE facility;
	o Complete the nuclear design reference data set compilation of neutron cross-section data;	o Qualify an advanced 3D Monte Carlo calculational technique using results from S3G cores;	o Qualify the advanced spatial kinetics program to improve prediction of transients;
	o Develop operating system and solution strategies for massively parallel computing.	o Continue parallelization and optimization of codes for the massively parallel computers.	o Establish initial computational capabilities and benchmarks on the massively parallel computers.
	$ 53,200	$ 53,300	$ 50,000
Reactor Technology Development	Design, analyze and test an advanced reactor core for the next generation reactor, including:	------->	------->

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III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Technology Development (Cont'd)	o Establish design for fabrication of mechanical test cell to conduct next generation reactor core design qualification testing;	o Deliver the mechanical test cell for design qualification testing of the core design;	o Perform testing of the mechanical test cell;
	o Perform structural, fuel system and thermal/hydraulic analysis to ensure reactor performance goals are met;	o Confirm structural and fuel system designs and thermal/hydraulic performance of final core design;	o Conduct and evaluate results of half scale and other hydraulic flow tests and confirm systems design and performance;
	o Conduct development work to define manufacturing processes for next generation reactor core,	o Continue development of overall core manufacturing processes;	o Complete remaining development for next generation reactor core manufacturing;
	Design and analyze control rod drive mechanism (CDM) and reactor equipment for the next generation reactor and integrate this equipment into overall design, including:	------->	------->
	o Design and fabricate the first CDM test unit and initiate testing;	o Deliver additional test units and conduct further testing;	o Perform tests on additional CDM test units;
	o Perform validation testing for reactor heavy equipment; conduct sizing analysis validation of closure and core basket.	o Complete validation of reference design; initiate final design and structural analysis validation of reactor equipment.	o Perform final design and structural analysis validation of reactor equipment.
	Conduct analyses and testing and develop computer models in the areas of thermal-hydraulics, structural mechanics, heat conversion, corrosion, fatigue, shock and vibration to improve performance and reduce cost, including:	------->	------->
	o Build prototypic test sections which more accurately represent power distribution;	o Initiate testing of prototypic test sections to improve predictive capability for flow and power distributions;	o Initiate final testing of prototypic test sections to support improved predictive models for flow and power distributions;
	o Conduct thermal performance testing to evaluate enhanced core power capability;	o Continue thermal performance testing to evaluate enhanced core power capability;	o Continue testing and analysis to improve power capability including evaluation of application to a future core design;

III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Technology Development (Cont'd)	o Develop predictive tools to enhance core performance; qualify a computer code;	o Develop thermal-hydraulic analytical models; design a test to provide data to support calculations of core performance;	o Perform qualification of advanced thermal-hydraulic analytical codes and testing to develop analytical methods that will allow enhanced performance in new core designs;
	o Perform proof-of-principle tests and feasibility demonstrations of energy conversion devices;	o Build and test energy conversion modules and evaluate cycle efficiencies;	o Build, test and evaluate energy conversion cells for increased power density and efficiency;
	o Conduct testing with various thermal and hydraulic test sections; design and procure hardware in support of modified hydraulic design testing; construct test sections as needed.	o Perform design of various tests to provide data to be used in development of advanced calculational tools.	o Begin testing of new designs; develop and improve tests.
	Carry out development, analysis and testing of fuel systems and heat sources to ensure performance and obtain longer life spans, including:	------->	------->
	o Perform analyses and testing to confirm adequacy of advanced fleet reactor and high-performance fleet core thermal-hydraulic and control rod drive mechanism performance and reactor equipment design;	o Establish criteria for evaluating HPFC performance during acceptance testing to support shipboard application, perform periodic advanced fleet reactor assessments to confirm analysis assumptions and complete autoclave testing of control rod drive mechanism drive cartridge and internal bearings;	o Establish adequacy of high-performance fleet core performance based on post-acceptance test data evaluation, continue periodic advanced fleet reactor assessments and initiate establishment of late-in-life performance capabilities for core lifetime extension;
	o Conduct thermal-hydraulic analysis to ensure core thermal limits are not exceeded for the AIW-A end-of-life test program;	o Deliver the S3G expended core examination equipment and begin examination; complete thermal-hydraulic evaluation of AIW-A end-of-life test data;	o Initiate design of AIW-A prototype expended core examination equipment; perform thermal-hydraulic analyses for S5G end-of-life tests and evaluate test results;
	o Deliver and install test units which will provide heat transfer data to ensure compatibility of next generation reactor core design with the heat exchanger.	o Evaluate test unit data and modify computer models for performance predictions in support of ensuring next generation reactor core/heat exchanger compatibility.	o Complete test unit evaluations and modifications to computer models for next generation reactor/heat exchanger performance predictions.

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III. Reactor Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Technology Development (Cont'd)	Evaluate advanced manufacturing and inspection technology and test feasibility of concepts to reduce manufacturing costs and improve product quality, including:	------->	------->
	o Develop manufacturing and inspection process improvements that eliminate use of hazardous solvents and reduce fabrication time;	o Continue development of process improvements emphasizing non-hazardous solvents and reducing fabrication time;	o Assess fabricability of fuel elements using fuel made by new processes; develop final process improvements to reduce fabrication time;
	o Provide facilities to conduct advanced manufacturing and inspection technique evaluation.	o Operate, maintain and upgrade facilities for manufacturing and inspection technique development.	o Operate and maintain facilities to support manufacturing and inspection technique evaluation.
	Ensure health and safety of workers, the public, and the environment and eliminate potential liabilities, including:	------->	------->
	o Survey and document radiological conditions; train personnel for all phases of radiological work;	o Continue to survey and document radiological conditions; train personnel for all phases of radiological work;	o Continue to survey and document radiological conditions; train personnel for all phases of radiological work;
	o Process and ship radioactive waste for disposal and conduct operations in compliance with applicable federal, state and local environmental regulations and DOE orders.	o Continue to process and ship radioactive waste for disposal and conduct operations in compliance with applicable federal, state and local environmental regulations and DOE orders.	o Continue to process and ship radioactive waste for disposal and conduct operations in compliance with applicable federal, state and local environmental regulations and DOE orders.
	$ 163,052	$ 205,351	$ 182,851
Reactor Development	$ 312,952	$ 348,951	$ 327,851

KEY ACTIVITY SUMMARY

NAVAL REACTORS DEVELOPMENT

I. Preface: Plant Development

Plant Development focuses on the components and systems which transfer, convert, store, and measure power created by the reactor. The goal is to maximize plant performance and endurance while ensuring the continued safe, reliable operation over the decades plants are required to operate. Plant components and systems operate in a harsh environment where extreme temperature, pressure, thermal cycling, radiation, and water chemistries demand extensive development, testing, evaluation, and monitoring to ensure they achieve and maintain predicted performance.

Plant Development includes efforts to ensure and extend continued safe, reliable operation of existing steam generators; develop a steam generator founded on a new concept, which will minimize the extensive costs associated with maintenance; design and develop state-of-the-art instrumentation and control equipment to provide more efficient and reliable control and monitoring capabilities for new plant and obsolete equipment replacement; test and evaluate structural materials and welding and fabrication techniques for existing and alternate applications -- including irradiated and non-irradiated tests which range in duration from months for accelerated-life testing to decades for life-time testing; develop and test water chemistries to reduce corrosion, and reduce levels of irradiated particulate and thus reduce post-shutdown radiation levels; confirm equipment performance and incorporate lessons learned into designs for new and modified equipment; develop methods for reducing personnel radiation exposure during maintenance and reducing servicing costs; pursue thermal and fluid transfer technologies for application to existing and developmental systems; and ensure integration of plant components and systems.

This work also includes activities necessary to ensure safe working conditions at Program facilities such as quality assurance, radiological monitoring and control, and environmental compliance activities. Plant Development decreases from FY 1995 through FY 1997 principally due to progress on new plant steam generator and instrumentation and control equipment, for which efforts peak in FY 1995, partially offset by inflation.

II. A. Summary Table: Plant Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Plant Development	$ 124,000	$ 146,700	$ 127,000	$ -19,700
Total, Plant Development	$ 124,000	$ 146,700	$ 127,000	$ -19,700

II. B. Laboratory and Facility Funding Table: Plant Development

Bettis Atomic Power Lab	$ 100,800	$ 108,600	$ 69,900	$ -38,700
Knolls Atomic Power Lab	23,000	38,100	57,100	19,000
All Other	200	0	0	0
Total, Plant Development	$ 124,000	$ 146,700	$ 127,000	$ -19,700

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Plant Development	Develop technology to ensure and extend the continued safe, reliable operation of existing steam generators; develop technology to provide safe, reliable, operation with significantly reduced maintenance requirements for new plant application. Work in this area includes:	------->	------->
	o Design and begin fabrication of two single-element test assemblies for secondary chemistry testing to determine if the design and materials being tested minimize corrosion as anticipated;	o Complete design of a multiple-element test assembly for secondary chemistry testing and begin fabrication;	o Complete fabrication of two single-element test assemblies and begin corrosion and deposition testing each in a different secondary chemistry;
	o Select starting material composition and process controls for use during fabrication of new concept steam generator manufacturing development unit hardware; test and evaluate material specimens fabricated with the same process to determine properties and applicability to use in new concept steam generator;	o Perform tests to determine adequate corrosion, cracking, and fatigue resistance; modify processes where deficiencies are found; complete the PM690 material manufacturing development program and recommend a qualification program;	o Test and evaluate material specimens to verify required properties are being obtained; conduct qualification testing of PM690; perform long-term low-temperature embrittlement fracture-toughness and crack growth rate tests of steam generator material;
	o Test various assemblies, including small-scale new concept steam generator test units to confirm adequacy of analysis tools for predicting performance; provide test data to support proper sizing of the heat-transfer area;	o Continue testing of small-scale steam generator designs, including steady-state and transient testing of the test unit, to provide needed feedback for incorporation into full-size designs;	o Complete steady-state testing of the test unit over a range of operating conditions; perform testing for transients frequently experienced in operating steam generators; incorporate changes into analysis tools for full-size unit design as necessary; perform full-scale steam drum flow test to determine if design meets established performance requirements;
	o Develop and evaluate improved corrosion monitoring and analysis techniques; perform tests to obtain needed data for determining long-term steam generator cleaning decisions; implement reference electrodes on D1G and S5G prototypes.	o Continue development and evaluation of monitoring and analysis methods for steam generator corrosion; qualify computer models to better understand and predict corrosion;	o Continue to develop and evaluate corrosion monitoring and analysis methods; continue corrosion computer model qualification;

III. Plant Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Plant Development (Cont'd)	Develop a new concept steam generator that is more corrosion resistant than conventional steam generators to increase radiation boundary integrity through reduced propensity for corrosion, increase heat transfer efficiency, and minimize life-cycle costs by reducing the number of inspections and servicings. Efforts in this area include:	------->	------->
	o Fabricate a full-scale lead subassembly to demonstrate the fabrication process;	o Assemble the lead subassembly in a heat-exchanger mockup and steam generator mockup to define details of the higher tier-assembly process; perform non-destructive evaluation; complete piece parts for the mockup; develop detailed features for a full-size steam generator design through design analysis and testing;	o Destructively evaluate the lead subassembly from full-scale mockups to ensure quality meets design requirements; complete fabrication of full-scale mockup to demonstrate design and manufacturing adequacy; factor lessons learned into manufacturing process;
	o Determine material ordering requirements and begin piece part fabrication process.	o Complete fabrication of manufacturing demonstration unit heat exchanger piece parts and begin fabrication of subassemblies.	o Fabricate manufacturing demonstration unit subassemblies to validate manufacturing capability and to develop a heat exchanger assembly process; fabricate and non-destructively evaluate the heat exchanger.
	Develop instrumentation and control components and systems with improved reliability and accuracy for application to existing and future Naval reactor plants; emphasis is on reducing development and acquisition costs through standardization and upgrading. Efforts in this area include:	------->	------->
	o Design and assemble a prototype standardized instrumentation and control system for monitoring and controlling reactor plant operation;	o Test prototype standardized instrumentation and control system to demonstrate it meets design objectives;	o Develop conceptual standardized instrumentation and control design for replacement of aging shipboard reactor plant instrumentation and control equipment;

III. Plant Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Plant Development (Cont'd)	o Investigate advanced solid state semiconducting materials and device designs which reduce voltage and switching losses at high power levels and improve switching speeds;	o Build and test advanced switching devices to increase power density and reduce losses, incorporate lessons learned into development; establish model to quantify reduced losses at higher current levels; design upscaled version to establish proof-of-principle;	o Build and test new devices and develop design improvements to increase power density and reduce losses; fabricate proof-of-principle upscaled version of circuit interrupter;
	o Develop equipment specifications for a rod control system, rod position indication system, and plant monitoring and protection instrument for the new plant; complete conceptual design for propulsion plant control panel and valve and heater control cabinets; initiate work on engineering models;	o Develop programming specifications for the rod control system and rod position indication system; fabricate hardware for integrated tests; complete initial designs of the propulsion plant control panel and the valve and heater control cabinets; finalize design and begin fabrication of the qualification unit;	o Complete qualification test cabinet for the propulsion plant control panel and valve and heater control cabinets; develop compatibility test procedures and begin testing; develop equipment specifications; develop equipment qualification test procedures and begin qualification;
	o Evaluate new technologies for application in reactor plant instrumentation and control equipment including pressure detection system design; continue equipment simplification efforts such as development of direct power conversion and solid state distribution equipment.	o Continue efforts to apply new technologies in instrumentation and control equipment which enhance accuracy, response time, and size of detectors; continue equipment simplification efforts; integrate engineering model components into a breadboard model of direct energy conversion system to demonstrate feasibility.	o Work to incorporate new technologies into instrumentation and control equipment; continue equipment simplification efforts; test engineering breadboard model to characterize feasibility, component performance and integrated control; develop reference design to support direct energy conversion systems.
	Improve understanding of material and component performance through testing, inspection, and analysis; develop predictive techniques to extend equipment lifetimes; characterize the effects of reactor plant operating environments on fastener and pressurizer materials; and evaluate replacement materials to determine if they will provide improved performance and sufficient lifetimes to prevent the need for costly replacement. Work includes:	------->	------->

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III. Plant Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Plant Development (Cont'd)	o Test and evaluate existing and potential plant materials such as Alloy 625 for resistance to stress corrosion cracking to verify design bases and assure component reliability; develop fundamental understanding of stress corrosion cracking mechanism; examine irradiated crack tip specimens and influence of grain boundary misorientation to correlate with stress corrosion performance; perform long-term stress corrosion and thermal stability tests of aged Alloy 625; initiate testing to assess the effect of using a mechanical stress improvement technique to redistribute welding residual stresses in materials test specimens;	o Continue development of new stress corrosion cracking predictive model; develop additional test technology to assess water chemistry effects and materials variables; complete stress corrosion cracking correlation with radiation and extend study to include Alloy 625; initiate corrosion fatigue testing of stainless steels and K Monel to determine the role of environment on the behavior of these materials; initiate testing of Alloy 690 forged material;	o Complete major elements of general stress corrosion cracking model and initiate changes to the design process to incorporate the new model; continue corrosion fatigue testing of stainless steels; develop stress corrosion cracking time and temperature dependence for Inconel from test data and incorporate result in materials analysis model; continue testing Alloy 690;
	o Perform analysis of welds to determine loads that occur due to welding; weld mockups while monitoring loads and temperatures to obtain data to compare with analysis predictions.	o Develop analysis software to analyze more complex geometries; design weld mockups to obtain experimental data needed to develop predictive capability.	o Develop analysis models for weld regions; predict welding loads for use in stress corrosion cracking predictive models and use analysis predictions to define changes to the welding process which result in lower weld residual loads and less susceptibility to cracking.
	Develop and validate methods to extend equipment lifetimes and reduce radiation exposure through corrosion reduction and optimal chemistry control; develop component and plant arrangement designs that stress simplification, improved performance, and cost efficiency. Efforts include:	------->	------->

III. Plant Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Plant Development (Cont'd)	o Evaluate alternate purification materials that remove greater amounts of radioactive corrosion products from primary coolant; reduce plant radiation levels by minimizing cobalt in the primary system; develop test program to determine the fundamental behavior of ion exchange resin for crud/activity removal;	o Perform laboratory testing of alternate media effectiveness; complete efforts to eliminate cobalt from the primary system; initiate ion exchange resin fundamental behavior test;	o Continue efforts to remove cobalt; continue purification media fundamental behavior test program;
	o Continue evaluations to reduce corrosion; continue new chemistry qualification tests;	o Continue qualification tests and perform prototype tests; perform tests and evaluate behavior in a plant; initiate qualification testing of selected chemistries;	o Implement selected chemistries and perform further tests;
	o Perform plant design analyses to ensure continued safe, reliable, efficient operation of systems and components; complete preliminary design of new pressurizer; test and evaluate equipment and systems to confirm performance and permit a simplified plant design.	o Perform plant design analyses to ensure continued safe, reliable, efficient operation of systems and components; complete pressurizer material drawings; perform engineering review of valve design/development efforts.	o Perform plant design analyses as necessary to ensure continued safe, reliable, and efficient operation of systems and components; fabricate engineering test valves to demonstrate suitability of new plant valves; begin new plant coolant pump testing to ensure design requirements met.
	Quality and radiological control of plant-related laboratory work, facilities, and vendor products. Work includes:	------->	------->
	o Perform quality assurance audits, evaluations, and training; continue radiation monitoring and control; ensure continued compliance with all applicable regulations; continue waste control efforts.	o Continue performance of quality assurance audits, evaluations, and training; continue radiation monitoring, control; ensure continued compliance with all applicable regulations; continue waste control efforts.	o Continue to perform quality assurance audits, evaluations, and training, radiation monitoring and control; ensure continued compliance with all applicable regulations; continue waste control efforts.
	$ 124,000	$ 146,700	$ 127,000
Plant Development	$ 124,000	$ 146,700	$ 127,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NAVAL REACTORS DEVELOPMENT

I. Preface: Reactor Operation and Evaluation

Reactor Operation and Evaluation provides for operating and servicing land-based prototype Naval nuclear propulsion plants. These plants allow testing of materials, components, cores, and systems under actual operating conditions to help ensure continued safe and reliable operations for the Navy's nuclear fleet. The plants also train Navy reactor plant operators while carrying out this testing -- this approach aids establishing "actual operating conditions."

Periodic major servicings are necessary to keep these plants operating safely and reliably. Naval Reactors adheres to stringent radiation exposure limits, quality control, and safety requirements which mandate careful planning of work, installation of servicing enclosures, rehearsals with plant component mockups, and meticulous monitoring of all efforts associated with the servicings. This effort is warranted to maintain the plants as well as prepare for and accomplish inactivations of plants no longer required. Naval Reactors completes the reduction in the number of prototype plants in FY 1996 with the shutdown of the sixth plant. This will leave two plants and require a major inactivation effort extending into the next decade to fully realize the attendant cost savings from shutting down three-fourths of the plants.

The Reactor Operation and Evaluation budget includes two categories -- Reactor Servicing and Refueling, and Reactor Operation and Testing.

REACTOR SERVICING AND REFUELING funds inactivation and remediation of older plants and facilities, and inspections, overhauls, and availabilities to ensure the continued reliability and safety of the operating plants. This effort includes planning and engineering for plant servicings, laboratory facility remediation activities, and designing and testing servicing equipment. The increase reflects preparation for the D1G and A1W inactivations.

REACTOR OPERATION AND TESTING provides for operation and routine maintenance of the prototype plants and associated support facilities to meet programmatic needs. The decrease reflects the reduction in the number of operating reactor plants.

II. A. Summary Table: Reactor Operation and Evaluation

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Reactor Servicing and Refueling	$ 119,130	$ 83,462	$ 106,517	$ 23,055
Reactor Operations and Testing	45,500	45,500	29,000	-16,500
Total, Reactor Operation and Evaluation	$ 164,630	$ 128,962	$ 135,517	$ 6,555

II. B. Laboratory and Facility Funding Table: Reactor Operation and Evaluation

Bettis Atomic Power Lab	$ 30,700	$ 42,000	$ 39,500	$ -2,500
Knolls Atomic Power Lab	132,930	86,662	95,717	9,055

II. B. Laboratory and Facility Funding Table: Reactor Operation and Evaluation

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	1,000	300	300	0
Total, Reactor Operation and Evaluation	$ 164,630	$ 128,962	$ 135,517	$ 6,555

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Operation and Evaluation			
Reactor Servicing and Refueling	Perform prototype plant servicing activities, including:	------->	------->
	o Complete S8G refueling overhaul and acceptance test program; modify and overhaul S8G secondary systems; replace instrumentation and control equipment;	--	--
	o Prepare for D1G inactivation; devise plant inactivation guidelines; start facility modification designs;	o Continue preparations for D1G inactivation; issue plant inactivation guidelines; begin work force training and facility modifications;	o Complete preparations and begin D1G inactivation; prepare engineering field changes and drawings; complete facility modifications;
	o Continue to prepare for S1C inactivation; complete training of personnel, equipment checkout, and facility modification; establish layup condition; deliver closure head shipping container and modified test head; dispose of excess material and equipment;	o Perform evaluations required for shipping irradiated components; defuel and ship out S1C core for examination; complete layup modifications; issue conceptual disassembly plan; dispose of excess material and equipment;	o Complete S1C servicing equipment shipout and disposal; complete layup of systems and equipment; dispose of excess material and equipment;
	o Complete S3G defueling and continue inactivation efforts; modify equipment previously tied-in to S3G for independent use by MARF;	o Continue S3G inactivation; complete modification of equipment previously tied-in to S3G for independent use by MARF;	o Ship out S3G defueling equipment; continue inactivation efforts;

III. Reactor Operation and Evaluation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Servicing and Refueling (Cont'd)	o Shutdown AIW-A and place the plant in a safe layup condition pending inactivation; devise inactivation guidelines for S5G and prepare site areas for servicing workers; initiate S5G and complete AIW design and installation of temporary plant systems to maintain the plants in safe condition during layup.	o Place S5G in a safe layup condition pending inactivation; continue efforts preparing for the inactivation of AIW and S5G including; training servicing workers, developing inactivation procedures, and testing; complete installation of the temporary plant systems to maintain S5G in a safe condition during layup.	o Initiate inactivation of AIW and S5G; continue planning and preparation efforts to service AIW-A including; training servicing workers, developing inactivation procedures, and testing.
	Develop reactor servicing equipment, procedures and systems, including:	------->	------->
	o Complete design of equipment for inactivating AIW and D1G; begin designing inactivation equipment for S5G; continue developing shipping safety report and servicing systems for the next generation reactor; continue developing welding and cutting techniques and procedures.	o Complete procedures for inactivating AIW reactor plants; complete design of equipment for inactivating S5G; complete design of disposal and inactivation equipment for D1G; continue developing shipping safety report and servicing systems for the next generation reactor; continue developing welding and cutting techniques and procedures.	o Begin checkout and make modifications to D1G and AIW servicing equipment; deliver equipment for servicing S5G; continue developing welding and cutting techniques and procedures; continue developing shipping safety report and servicing systems for the next generation reactor.
	Conduct environmental control programs and scheduled maintenance shutdowns, improve component inspection capabilities, and provide system modifications, including:	------->	------->
	o Provide technical site assistance for plant system modifications; improve analytical equipment and video capabilities to reduce evaluation time of steam generator inspections;	o Continue technical site assistance for plant system modifications; conduct component inspections and continue to improve analytical equipment for steam generator inspections;	o Continue technical site assistance for plant system modifications; continue to improve analytical equipment;
	o Complete MARF evacuation freeze protection systems design; test S8G evacuation freeze protection systems upon installation; carry out remediation activities; complete asbestos removal from S1W.	o Complete analyses to extend MARF Safety Analysis Report to end-of-life; test MARF evacuation freeze protection systems upon installation; carry out remediation activities; such as asbestos removal at the laboratories and decontamination of RML cells.	o Issue test procedures for D1G end-of-life testing; carry out remediation activities such as conducting asbestos removal from laboarory facilities; complete asbestos removal from S5G.

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III. Reactor Operation and Evaluation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reactor Servicing and Refueling (Cont'd)	$ 119,130	$ 83,462	$ 106,517
Reactor Operations and Testing	Operate and maintain the prototype reactor plants safely and reliably. Test components, cores, and materials. Maintain shutdown prototype plants in a layup condition and operate systems and components to enable inactivation. Efforts include:	------->	------->
	o Perform depletion and testing of the developmental materials core in MARF, the advanced fleet reactor core (achieve 4000 effective full power hours per year) in S8G, the D2W core in D1G, and the S5G core in S5G;	o Perform depletion and testing of the developmental materials core in MARF, the advanced fleet reactor core in S8G, the D2W core in D1G, and the S5G core in S5G;	o Perform depletion and testing of the cores in MARF and S8G; complete the D2W core depletion in D1G;
	o Monitor S1C plant systems during layup; operate the prototypes for testing and training at a utilization factor greater than 90%;	o Monitor S1C and A1W plant systems during layup; operate the prototypes for testing and training at a utilization factor greater than 90%;	o Monitor A1W and S5G plant systems during layup; operate the prototypes for testing and training at a utilization factor greater than 90%;
	o Install special equipment in S5G and D1G steam generators to monitor corrosion performance; complete end-of-life test program and shut down A1W.	o Conduct reactor physics testing of D2W core in D1G; complete end-of-life test program and shut down S5G.	o Perform end-of-life test program and shut down D1G; test new plant instrumentation equipment.
	$ 45,500	$ 45,500	$ 29,000
Reactor Operation and Evaluation	$ 164,630	$ 128,962	$ 135,517

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NAVAL REACTORS DEVELOPMENT

I. Preface: Program Direction

Program Direction funds salaries, benefits, travel, and other expenses for 217 full-time Federal employees at the Naval Reactors, Pittsburgh Naval Reactors, Schenectady Naval Reactors, and Idaho Operations Offices to support the Naval Nuclear Propulsion Program.

The 207 full-time Federal employees at Naval Reactors Headquarters, Pittsburgh, and Schenectady offices are responsible for all aspects of Naval nuclear propulsion, including design, test, inspection, and qualification to ensure high Programmatic standards. Due to the nature of the work, Naval Reactors is centrally managed, which places a heavy burden on the Federal employees who must oversee and set policies and procedures affecting subordinate organizations -- including shipyards, operating ships, contractors, and the Bettis and Knolls Atomic Power Laboratories and associated facilities -- and deal with numerous day-to-day issues involving these activities, as well as interface with other Department of Energy offices and numerous local, state, and Federal regulatory agencies.

10 FTEs at the Idaho Field Office oversee the operation of the Advanced Test Reactor which is used by Naval Reactors for materials irradiation testing.

The increase in FY 1996 is due to escalation.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Program Direction	$ 18,300	$ 18,800	$ 19,200	$ 400
Total, Program Direction	$ 18,300	$ 18,800	$ 19,200	$ 400

II. B. Laboratory and Facility Funding Table: Program Direction

All Other	$ 18,300	$ 18,800	$ 19,200	$ 400
Total, Program Direction	$ 18,300	$ 18,800	$ 19,200	$ 400

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	Funding by Object Class:	Funding by Object Class:	Funding by Object Class:
	Pers Comp $14,000	Pers Comp $14,400	Pers Comp $14,800
	Benefits 2,400	Benefits 2,500	Benefits 2,600
	Travel 670	Travel 690	Travel 710
	Other Svcs 1,230	Other Svcs 1,210	Other Svcs 1,190
	Total Pgm Dir $18,300	Total Pgm Dir $18,800	Total Pgm Dir $19,300
	Continue to direct work, provide management and oversight of laboratories and facilities, and ensure safe and reliable operations of Naval nuclear reactor plants and the Advanced Test Reactor.	Continue to direct work, provide management and oversight of laboratories and facilities, and ensure safe and reliable operations of Naval nuclear reactor plants and the Advanced Test Reactor.	Continue to direct work, provide management and oversight of laboratories and facilities, and ensure safe and reliable operations of Naval nuclear reactor plants and the Advanced Test Reactor.
	217.0 FTE $ 18,300	219.0 FTE $ 18,800	217.0 FTE $ 19,200
Program Direction	217.0 FTE $ 18,300	219.0 FTE $ 18,800	217.0 FTE $ 19,200

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NAVAL REACTORS DEVELOPMENT

I. Preface: Capital Equipment

Capital equipment requirements reflect the Program's effort to maintain, upgrade and ensure safe and efficient operation of facilities, including Bettis Atomic Power Laboratory in West Mifflin, PA, Knolls Atomic Power Laboratory in Niskayuna, NY, several land-based prototype nuclear reactor plants, and the Expended Core Facility (ECF) at the Naval Reactors Facility in Idaho. Funds are also provided for maintaining the Advanced Test Reactor (ATR) at the Idaho National Engineering Laboratory. Additionally, these requirements include equipment for testing and development work essential to accomplishing Program objectives.

Procuring massively parallel computers vice conventional supercomputers will fulfill nuclear design/analysis needs for increased computing power while saving money -- not only are they less expensive overall, but by adding additional units as computing needs grow, they allow spreading the cost over several years, obviating a higher capital equipment budget request. In comparable dollars, Naval Reactors' FY96-97 capital equipment requests are 1/3 lower than FY87-93 annual levels were.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Major Items of Equipment	$ 12,900	$ 8,100	$ 24,100	$ 16,000
Other Capital Equipment	29,500	20,100	18,900	-1,200
Total, Capital Equipment	$ 42,400	$ 28,200	$ 43,000	$ 14,800

II. B. Laboratory and Facility Funding Table: Capital Equipment

Bettis Atomic Power Lab	$ 22,200	$ 13,700	$ 21,300	$ 7,600
Idaho National Engineering Lab	700	500	500	0
Knolls Atomic Power Lab	19,500	14,000	21,200	7,200
Total, Capital Equipment	$ 42,400	$ 28,200	$ 43,000	$ 14,800

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
Major items of Equipment	FY 1994 requirements include: prototype freeze protection and atmospheric control upgrades; equipment to test advanced control drive mechanisms; new transfer casks for transporting irradiated test specimens between ECF and ATR to replace aging equipment and ensure continued safe operations; network and information system upgrades for both Bettis and Knolls to increase processing capability to meet projected technical support and administrative computing demands and replace by-then obsolete equipment; general computer storage upgrades to optimize performance of the 1992/93 supercomputers by adding memory and/or disk capacity for nuclear design and analysis applications; and gas atomization equipment.	FY 1995 requirements include: equipment to test advanced control drive mechanisms at Bettis ($0.3M); new transfer casks for transporting irradiated test specimens beween ECF and ATR to replace aging equipment and ensure continued safe operations ($2.2M); upgrades to corrosion and chemistry test equipment at Knolls ($1.8M); Bettis and Knolls general computer/storage upgrades to extend life ($2.0M); gas atomization equipment at Knolls ($1.0M); and prototype freeze protection and atmospheric control upgrades ($0.8M).	FY 1996 requirements include: massively parallel computer systems for Bettis and KAPL to provide needed increases in computing power for nuclear design/analysis applications ($10.3M); completion of the ECF-ATR test train transfer cask procurement ($3.0M); replacement of the obsolete telephone switching system at Knolls ($2.9M); thermal-hydraulic test equipment for Knolls to improve understanding of reactor fluid dynamics ($2.6M); an analytical electron microscope to replace an 18-year-old model for materials examination at Bettis ($1.8M); continuation of corrosion/chemistry test equipment upgrades at Knolls ($1.4M); rod control and rod position indication equipment to support testing control drive mechanisms at Bettis ($1.1M); and replacement of all in-pile specimen tubes in the ATR ($1.0M).
	$ 12,900	$ 8,100	$ 24,100
Other Capital Equipment	Includes replacement, upgrade, and addition of the following: laboratory engineering, test, recording, imaging, inspection and analysis equipment; high-power electronics equipment; networking and peripheral equipment for local and wide area networks; fabrication process development equipment; safeguards and security equipment; environmental monitoring equipment; and prototype component replacement and modification.	Includes replacement, upgrade, and addition of the following: laboratory equipment for recording, imaging, inspection and analysis, and fabrication process development; high-power electronics equipment; computer workstation and network equipment; safeguards and security equipment; facility equipment; and prototype component replacement and modification.	Includes replacement, upgrade, and addition of the following: laboratory equipment for recording, imaging, inspection and analysis, and fabrication process development; material handling equipment; high-power electronics equipment; computer workstation, network and storage equipment; safeguards and security equipment; facility equipment; and prototype component replacement and modification.
	$ 29,500	$ 20,100	$ 18,900

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	$ 42,400	$ 28,200	$ 43,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NAVAL REACTORS DEVELOPMENT

I. Preface: Construction

II. A. Summary Table: Construction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
GP-N-101 General Plant Projects. Various Locations	$ 7,000	$ 6,200	$ 6,600	$ 400
95-D-200 Laboratory Systems and Hot Cell Upgrades, Various Locations	0	2,400	11,300	8,900
95-D-201 Advanced Test Reactor Radioactive Waste System Upgrades. INEL, ID	0	700	4,800	4,100
93-D-200 Engineering Services Facilities. Knolls Atomic Power Laboratory. Niskayuna, NY	7,000 a/	7,900	3,900	-4,000
92-D-200 Laboratories Facilities Upgrade Various Locations	2,800	2,800	0	-2,800
90-N-102 Expended Core Facility Dry Cell Project, Naval Reactors Facility, ID	0	0	3,000	3,000
88-N-103 Material Handling and Storage Modifications. Knolls Atomic Power Laboratory. Niskayuma, NY	270	0	0	0
Total Construction	$ 17,070	$ 20,000	$ 29,600	$ 9,600

II. B. Laboratory and Facility Funding Table: Construction

Bettis Atomic Power Lab	$ 5,700	$ 7,600	$ 17,400	$ 9,800
Idaho National Engineering Lab	500	900	5,200	4,300
Knolls Atomic Power Lab	10,870	11,500	7,000	-4,500
Total Construction	$ 17,070	$ 20,000	$ 29,600	$ 9,600

a/ Favorable construction bids early in the project allowed for a reduction of the total estimated cost by $1,500,000 adjusted to FY 1994 appropriation. This reduction is a source for part of a proposed $2.9M reprogramming for settlement of a contractor claim on project 81-T-112, Modifications and Additions to Prototype Facilities, which is pending Congressional approval.

IV. A. Construction Funded Project Summary

Project No.	Project Title	Previously Appropriated	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
GP-N-101	General Plant Projects (FY 1996), Various Locations	0	0	0	6,600	0	6,600
GP-N-101	General Plant Projects (FY 1995), Various Locations	0	0	6,200	0	0	6,200
GP-N-101	General Plant Projects (FY 1994), Various Locations	0	7,000	0	0	0	7,000
95-D-200	Laboratory Systems and Hot Cell Upgrades, Various Locations	0	0	2,400	11,300	5,900	19,600
95-D-201	Advanced Test Reactor Radioactive Waste System Upgrades, INEL, ID	0	0	700	4,800	500	6,000
93-D-200	Engineering Services Facilities, Knolls Atomic Power Laboratory, Niskayuna, NY	2,200	7,000 a/	7,900	3,900	0	21,000
92-D-200	Laboratories Facilities Upgrade, Various Locations	12,400	2,800	2,800	0	0	18,000
90-N-102	Expended Core Facility Dry Cell Project, Naval Reactors Facility, ID	36,146	0	0	3,000	9,500	48,646
88-N-103	Material Handling and Storage Modifications, Knolls Atomic Power Laboratory, Niskayuna, NY	3,100	270	0	0	0	3,370
Total Naval Reactors Development Construction		$53,846	$17,070	$20,000	$29,600	$15,900	$136,416

a/ Favorable construction bids early in the project allowed for a reduction of the total estimated cost by $1,500,000 adjusted to FY 1994 appropriation. This reduction is a source for part of a proposed $2.9M reprogramming for settlement of a contractor claim on project 81-T-112, Modifications and Additions to Prototype Facilities, which is pending Congressional approval.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: GP-N-101 (FY 1996); General Plant Projects
Various Locations

TEC: $6,600
TPC: $6,600

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$6,600	$0	$6,600	$4,200
1997	-	$0	-	$2,400

3. Narrative:

This project will provide necessary minor improvements, alterations, and additions to Naval Reactors laboratories and associated prototype nuclear propulsion plant sites. These efforts primarily consist of facility upgrades and alterations, utility and safeguards upgrades, and additions to existing facilities. Examples of projects include renovating a chemistry laboratory; consolidating laboratory support services; upgrading or refurbishing utilities; and constructing noise and materials testing facilities and facilities to develop a fuel manufacturing process.

The efforts planned under this project are necessary to ensure the continuity of existing and future programs, reduce maintenance and operating costs of aging facilities, provide facilities to take advantage of technological advances, and ensure continued compliance with environmental regulations.

Efforts in FY 1996 will include conceptual and detailed design work, long-lead material procurements, site preparations for minor construction, and actual physical construction of various projects which will continue in FY 1997.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 95-D-200: Laboratory Systems and Hot Cell Upgrades
Bettis Atomic Power Laboratory
Idaho Falls, Idaho and West Mifflin, Pennsylvania

TEC: $19,600 a/
TPC: $23,650 a/

Start Date: 1st Qtr. FY 1995

Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$2,400	$0	$2,400	$1,600
1996	11,300	0	11,300	7,200
1997	4,800	0	4,800	7,100
1998	1,100	0	1,100	3,700

3. Narrative:

The proposed scope of work includes modification and upgrading of various support systems and facilities of Bettis Atomic Power Laboratory at Idaho Falls, Idaho and West Mifflin, Pennsylvania. The project includes design, procurement, and installation, refurbishment or reconfiguration of site facilities and utilities. Included are such items as hot cell refurbishment; raw water utilities refurbishment; a shock test facility; facility modifications; and building and site renovations or reconfigurations.

This project is the next in a series of ongoing upgrades to aging facilities at the Bettis Atomic Power Laboratory sites in Idaho Falls, Idaho and West Mifflin, Pennsylvania. Most of the buildings and infrastructure date to the 1950's and require upgrading to continue to serve their function.

Funds in FY 1996 and FY 1997 are necessary to continue designs, place construction contracts, and install equipment.

a/ The total estimated cost was reduced from $21,500,000 to $19,600,000 and the total project cost was reduced from $25,240,000 to $23,650,000 to reflect the downscaling of mission at the Naval Reactors Facility in Idaho.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 95-D-201; Advanced Test Reactor Radioactive Waste System Upgrades
Idaho National Engineering
Laboratory, Idaho

TEC: $6,000
TPC: $6,691

Start Date: 1st Qtr. FY 1995

Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 700	$0	$ 700	$ 500
1996	4,800	0	4,800	4,000
1997	500	0	500	1,500

3. Narrative:

This effort upgrades key portions of the radioactive waste system which handles liquid radioactive effluent and radioactively contaminated resins from the Advanced Test Reactor facility. The current system uses underground single-wall piping and storage tanks with no capability to monitor system integrity. Several storage tanks are suspected of having leaked and have been removed from service. This upgrade will ensure system integrity by providing the ability to monitor for leaks, increase storage capacity, and provide waste sampling and chemical mixing capability before shipment.

This project will also provide an enclosed, heated, all-weather truck transfer facility for radioactive liquid waste and resin transfer. Resin transfer is currently conducted at two separate transfer stations located outside of the Advanced Test Reactor building. These stations are outdoors and unprotected and, consequently, risk freezing and accidental leaks or spills creating the potential for operational shutdown. Although some temporary actions have been taken, the remaining risks warrant the need to move this operation into an enclosed facility permitting year-round use with controlled effluent discharge.

Funds in FY 1996 are necessary to place the construction contract. FY 1997 funds are required for construction follow, completion, and closeout.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 93-D-200: Engineering Services Facilities
Knolls Atomic Power Laboratory
Niskayuna, New York

TEC: $19,500
TPC: $19,500

Start Date: 1st Qtr. FY 1993

Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$2,200	$0	$2,200	$ 586
1994	7,000	-1,500 a/	5,500	1,816
1995	7,900	0	7,900	6,130
1996	3,900	0	3,900	8,500
1997	0	0	0	2,468

3. Narrative:

The Engineering Services Facilities project will replace facilities scheduled for decommissioning and dismantlement; upgrade, renovate, and expand aging facilities and utilities to reduce operating and maintenance costs; and adapt the aging facilities to future programmatic needs.

The Office of Environmental Restoration and Waste Management (EM) has scheduled clean-up of the former Defense Programs' Separation Process Research Unit (SPRU) located at Knolls to begin in the mid-1990's. Housed within SPRU are office space and a radioactive waste processing facility. Replacements for these facilities are required to be on-line before EM's clean-up efforts begin. Additionally, site facilities are approaching 40 years of use. Operating and maintenance costs are rising, and modifications made to support emergent requirements have resulted in overcrowded conditions and less than optimum operations. Renovations and upgrades of utilities and site support systems and construction of a small annex to the materials development laboratories will help alleviate these concerns.

Funds in FY 1996 are necessary to complete construction and installation and conduct construction follow and closeout.

a/ Favorable construction bids early in the project allowed for a reduction of the total estimated cost by $1,500,000. These funds are a source for part of a proposed $2.9M reprogramming for settlement of a contractor claim on project 81-T-112, Modifications and Additions to Prototype Facilities, which is pending Congressional approval.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 90-N-102: Expended Core Facility Dry Cell Project
Naval Reactors Facility, Idaho

TEC: $48,646
TPC: $51,027

Start Date: 1st Qtr. FY 1990 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1990	$3,546	$0	$3,546	$1,564
1991	4,000	0	4,000	3,129
1992	15,000	0	15,000	4,238
1993	13,600	0	13,600	10,078
1994	0	0	0	2,410
1995	0	0	0	2,000
1996	3,000	0	3,000	8,700
1997	9,500	0	9,500	10,000
1998	0	0	0	6,527

3. Narrative:

The Expended Core Facility (ECF) Dry Cell Project will consist of a dry shielded fuel handling, disassembly, examination and shipping facility, a decontamination shop, and a shielded repair shop. The dry cell will contain semi-automated equipment to receive and prepare fuel for shipment to the Idaho Chemical Processing Plant. The decontamination and repair shops will be integrally connected to the dry cell, and to existing water pits, to allow routine servicing of equipment without removing equipment from a shielded environment. The dry cell will be located within the existing ECF South Bay, and a 16,000 square foot extension to the existing 133,000 square foot facility will be used to house necessary control, receiving, storage, and training spaces.

Core examinations and preparations for transfer to the Idaho Chemical Processing Plant are currently performed in water pits. This method is labor intensive, has notable technical disadvantages, and involves a significant burden of deliberately redundant administrative and physical controls for nuclear safety. The receipt of expended nuclear cores has increased since the late 1980s. This surge will be compounded by the fact that many of these cores will be larger and heavier than those that are currently processed in the water pits. Existing facilities and systems can not be economically upgraded and automated to meet the projected workload increases. The Dry Cell Project is essential to continued timely handling of expended cores in support of scheduled Naval nuclear-powered vessel refuelings and inactivations.

A June 1993 court injunction placed this project on hold until completion of the Spent Fuel Environmental Impact Statement (EIS). The EIS record of decision is on schedule to meet the June 1995 deadline set in a Idaho/Navy/DOE agreement and subsequent court order. Funds retracted from contracts at the time of the injunction combined with FY 1996 funds will allow placement of the construction contract and purchase/installation of dry cell equipment. Equipment installation, checkout and testing will continue through FY 1997 and complete in FY 1998. The total estimated cost increased $4,700,000 to cover contract termination costs and inflation due to the injunction.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OTHER DEFENSE ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

NAVAL REACTORS

I. Preface: Enriched Materials

In the past, the Enriched Materials budget provided highly-enriched uranium (HEU) to make fuel for the Navy's nuclear-powered ships. Since existing inventories can now meet HEU fuel requirements for many years to come, DOE approved shutting down the HEU production facility (TOP) in Portsmouth, Ohio. Upon completion of the shutdown, DOE will realize savings of about $120 million per year. Naval Reactors' funding for the shutdown and associated efforts completes in FY 1995. (Note: Naval Reactors has budgeting responsibility only. The Office of Uranium Programs is responsible for execution of shutdown efforts.)

II. A. Summary Table: Enriched Materials

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Naval Reactors Program Support	$ 70,000	$ 32,000	$ 0	$ -32,000
Total, Enriched Materials	$ 70,000	$ 32,000	$ 0	$ -32,000

II. B. Laboratory and Facility Funding Table: Enriched Materials

Oak Ridge Operations Office	$ 70,000	$ 32,000	$ 0	$ -32,000
Total, Enriched Materials	$ 70,000	$ 32,000	$ 0	$ -32,000

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Enriched Materials			
Naval Reactors Program Support	Continue efforts to shut down highly enriched uranium (HEU) operations at the Portsmouth diffusion plant.	Complete funding TOP facility shutdown efforts and associated activities at the Portsmouth diffusion plant.	
	$ 70,000	$ 32,000	$ 0
Enriched Materials	$ 70,000	$ 32,000	$ 0

Defense Nuclear Waste Disposal

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Defense Nuclear Waste Disposal					
Defense Nuclear Waste Disposal	120.0	120.0	129.4	129.4	198.4
Total, Defense Nuclear Waste Disposal	120.0	120.0	129.4	129.4	198.4

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Defense Nuclear Waste Disposal

For nuclear waste disposal activities to carry out the purposes of Public Law 97-425, as amended, including the acquisition of real property or facility construction or expansion, [$129,430,000,] $198,400,000, to remain available until expended, all of which shall be used in accordance with the terms and conditions of the Nuclear Waste Fund appropriation of the Department of Energy contained in this title.

Further, for these activities, $178,846,000, to be come available on October 1, 1996 and remain available until expended.

Of the amounts made available only for 1996 under this head, (1) not to exceed $10,110,000 may be provided to the State of Nevada, for the sole purpose of conduct of its scientific oversight responsibilities pursuant to the Act; and (2) not more than $12,620,000 may be provided to affected local governments, as defined in the Act, to conduct appropriate activities pursuant to the Act: *Provided further*, That the distribution of the funds herein provided among the affected units of local government shall be determined by the Department and made available to the State and affected units of local government by direct payment: *Provided further*, That within ninety days of the completion of each Federal fiscal year, each State or local entity shall provide certification to the Department, that all funds expended from such payments have been expended for activities as defined in Public Law 97-425, as amended. Failure to provide such certification shall cause such entity to be prohibited from any further funding provided for similar activities: *Provided further*, That none of these funds may be used directly or indirectly to influence legislative action on any matter pending before Congress or a State legislature or for any lobbying activity as provided in 18 U.S.C. 1913: *Provided further*, That none of these funds may be used for litigation expenses: *Provided further*, That none of these funds may be used to support multistate efforts or other coalition building activities inconsistent with the restrictions contained in this Act.

EXPLANATION OF CHANGE

Beginning in FY 1996, funding for scientific oversight activities to be conducted by the State of Nevada and affected local governments, pursuant to the Nuclear Waste Policy Act of 1982, (P.L. 97-425), as amended, will be included in the budget request for the Defense Nuclear Waste Disposal appropriation. The requested funding levels for oversight activities are based on the funding amounts included in the State of Nevada and affected local governments oversight proposals.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE NUCLEAR WASTE DISPOSAL

OVERVIEW

DEFENSE NUCLEAR WASTE DISPOSAL

Section 8(b) of the Nuclear Waste Policy Act (NWPA), as amended, required the President to evaluate the use of disposal capacity at the civilian respository(ies) to be developed under Subtitle IA of the NWPA for the disposal of high-level radioactive waste from atomic energy defense activities. The required evaluation is documented in "An Evaluation of Commercial Repository Capacity for the Disposal of Defense High-Level Waste" DOE/DP-0020/1, June 1985. This evaluation concluded that there was no basis for the establishment of a separate repository for the permanent disposal of defense high-level waste. Based on this conclusion, the Secretary of Energy recommended, and the President approved, the disposal of defense high-level wastes in the civilian repository. Upon receipt of the Presidential decision on April 30, 1985, the Secretary of Energy became obligated under Section 8(b)(2) of the NWPA to proceed promptly with arrangements for the use of the repository(ies) for the disposal of such waste. "Such arrangements shall include the allocation of costs of developing, constructing, and operating this repository or repositories to be developed under Subtitle IA of the Act. The costs resulting from permanent disposal of high-level radioactive waste from atomic energy defense activities shall be paid by the Federal Government into the special account established under section 302." Section 302(b)(4) of the NWPA requires the Federal Government to make payments into the Nuclear Waste Fund before defense high-level wastes are disposed of in the repository.
A separate appropriation for Defense Nuclear Waste Disposal was established as part of the FY 1993 Energy and Water Development Appropriation (P.L. 102-377) in lieu of a payment from the Department of Energy into the Nuclear Waste Fund for the disposal of defense high-level waste in the civilian repository. The FY 1996 Congressional Budget request for this account is $198.4 million, which will provide funding for Office of Civilian Radioactive Waste Management activities. As in prior years, this funding will primary be used to support the Yucca Mountain Site Characterization Project.

This budget does not reflect FY 1997 funding request levels for National Security programs. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted in the near future.

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

DEFENSE NUCLEAR WASTE DISPOSAL

(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Defense Nuclear Waste Disposal

Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
DEFENSE NUCLEAR WASTE DISPOSAL			
Operating Expenses	$ 120,000	$ 129,430	$ 198,400
TOTAL	$ 120,000	$ 129,430	$ 198,400
Summary			
Operating Expenses	$ 120,000	$ 129,430	$ 198,400
Total Program	$ 120,000	$ 129,430	$ 198,400
Staffing (FTE's)	0	0	0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE NUCLEAR WASTE DISPOSAL
(dollars in thousands)

SUMMARY OF CHANGES

FY 1995 Request	$129,430
FY 1995 Comparable	$129,430

CHANGES FROM FY 1995 TO FY 1996

DEFENSE NUCLEAR WASTE DISPOSAL

Increase for Office of Civilian Radioactive Waste Management activities, including Yucca Mountain site characterization, spent fuel storage, transportation, quality assurance, systems and compliance, and program support	+ 68,970
FY 1996 CONGRESSIONAL BUDGET REQUEST	$198,400

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE NUCLEAR WASTE DISPOSAL
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEFENSE NUCLEAR WASTE DISPOSAL

I. Preface: DEFENSE NUCLEAR WASTE DISPOSAL

Since enactment of the Nuclear Waste Policy Act (NWPA) in 1983, the Nuclear Waste Fund (NWF) has incurred costs for activities related to disposal of high-level waste generated from atomic energy defense activities. The balance owed by the Federal Government to the Nuclear Waste Fund was approximately $670 million (including principal and interest) at the end of FY 1994. Before establishment of the Defense Nuclear Waste Disposal Appropriation in FY 1993, the Federal Government had made two payments into the Nuclear Waste Fund, $5 million in FY 1991 and $7.5 million in FY 1992. The FY 1993 funding of $100 million from the Defense Nuclear Waste Disposal appropriation represented the first significant contribution to the Program by the Federal Government. The FY 1994 and FY 1995 appropriations from the Defense Nuclear Waste Disposal account were $120 million and $129.4 million respectively. The FY 1996 Congressional budget request is $198.4 million. As in prior years, this account will support activities conducted by the Office of Civilian Radioactive Waste Management pursuant to the NWPA. Overall program activities are described in greater detail in the budget request for the Nuclear Waste Fund, which includes the Defense funding.

II. A. Defense Nuclear Waste Disposal

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change
Total Defense Nuclear Waste Disposal	$120,000	$129,430	$198,400	$68,970

II. B. Laboratory and Facility Funding Table: Defense Nuclear Waste Disposal

Lawrence Berkeley Lab	$1,532	$1,652	$1,657	5
Lawrence Livermore Lab	10,149	10,947	11,268	321
Nevada Operations Office	108,319	116,831	185,475	68,644
Total, Defense Nuclear Waste Disposal	$120,000	$129,430	$198,400	$68,970

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
DEFENSE NUCLEAR WASTE DISPOSAL	Provide funds for Yucca Mountain site characterization activities, including ESF construction, site investigations, systems engineering, waste package and repository design, and regulatory, institutional, quality assurance, and information management activities.	Provide funds for Yucca Mountain site characterization acitivties, including ESF construction, site investigations, systems engineering, waste package and repository design, and regulatory, institutional, quality assurance, and information management activities.	Provide funds for Office of Civilian Radioactive Waste Management activities, including Yucca Mountain site characterization, spent-fuel storage, transportation, quality assurance, systems and compliance and program support.
	$ 120,000	$ 129,430	$ 198,400
DEFENSE NUCLEAR WASTE DISPOSAL	$ 120,000	$ 129,430	$ 198,400

Defense Environmental Management

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ENVIRONMENTAL RESTORATION AND WASTE MANAGMENT

BUDGET JUSTIFICATION AND SUPPORTING MATERIALS FOR THIS ACTIVITY ARE CONTAINED IN A SEPARATE VOLUME

DOE/CR-0030
Volume 2 of 5

FY 1996 Congressional Budget Request

Energy Supply Research and Development

Chief Financial Officer

February 1995

Department of Energy

Volume 2

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH AND DEVELOPMENT

VOLUME 2

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Energy and Water Development Subcommittees:					
Energy Supply Research and Development	3,175.2	3,160.0	3,314.6	3,314.6	3,396.5
Uranium Supply and Enrichment Activities	135.1	135.1	73.2	73.2	42.3
UE Decontamination & Decommissioning Fund	286.3	286.3	301.3	301.3	288.8
General Science and Research Activities	1,604.5	1,604.5	984.0	984.0	1,017.5
Isotope Production and Distribution Fund	4.9	4.9	—	—	—
Atomic Energy Defense Activities:					
Weapons Activities	3,630.2	3,294.3	3,229.1	3,240.2	3,540.2
Defense Environmental Restoration & Waste Mgmt	5,170.1	6,065.0	5,092.7	5,605.0	6,008.0
Materials Support & Other Defense Programs	1,960.4	1,401.3	1,849.7	1,326.3	1,432.2
Defense Nuclear Waste Disposal	120.0	120.0	129.4	129.4	198.4
Total, Atomic Energy Defense Activities	10,880.7	10,880.6	10,300.9	10,300.9	11,178.8
Departmental Administration	289.2	304.5	281.6	281.6	317.1
Office of Inspector General	30.4	30.4	26.5	26.5	31.0
Power Marketing Administration:					
Alaska Power Administration	4.0	4.0	6.5	6.5	4.3
Bonneville Power Administration (non-add)	(50.0)	(50.0)	(147.3)	(147.3)	(-200.0)
Conservation Direct Loan Financing Account (non-add)	—	—	—	—	(26.6)
Southeastern Power Administration	29.8	29.8	22.4	22.4	19.8
Southwestern Power Administration	33.6	33.6	21.3	21.3	29.8
Western Area Power Administration	285.1	285.1	229.8	229.8	310.9
Falcon & Amistad Operating & Maintenance Fund	—	—	—	—	1.0
Colorado River Basin	—	—	—	—	-10.0
Total, Power Marketing Administrations	352.5	352.5	280.0	280.0	355.8
Federal Energy Regulatory Commission	—	—	—	—	—
Nuclear Waste Disposal Fund	260.0	260.0	392.8	392.8	—
Geothermal Resources Development Fund	-4.5	-4.5	—	—	—
Total, Appropriations Before the Energy and Water Development Subcommittees	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Interior and Related Agencies Subcommittees:					
Fossil Energy Research and Development	426.0	426.0	441.8	441.8	436.5
Alternative Fuels Production	-4.8	-4.8	-3.9	-3.9	-2.4
Naval Petroleum and Oil Shale Reserves	214.8	214.8	187.1	187.1	101.0
Energy Conservation	669.1	669.1	770.8	770.8	890.5
Economic Regulation Administration	13.0	13.0	12.4	12.4	10.5
Emergency Preparedness	8.9	8.9	8.2	8.2	8.2
Strategic Petroleum Reserve	206.8	206.8	243.7	243.7	212.7
Strategic Petroleum Account	—	—	-107.8	-107.8	-187.0
SPR Decommissioning Fund	—	—	—	—	100.0
Proceeds from sale of Weeks Island Oil	—	—	—	—	-100.0
Energy Information Administration	86.6	86.6	84.6	84.6	84.7
Clean Coal Technology	221.5	221.5	37.1	37.1	45.0
Total, Appropriations Before the Interior and Related Agencies Subcommittees	1,841.9	1,841.9	1,674.0	1,674.0	1,599.7
Energy and Water Development appropriations	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8
Payment to States (non-add)	(2.5)	(2.5)	(2.5)	(2.5)	(2.5)
Uranium Enrichment D&D Fund Discretionary Payments	-129.8	-129.8	-133.7	-133.7	-395.0
Total, Department of Energy Appropriations	18,726.4	18,726.4	17,495.2	17,495.2	17,832.6

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL STAFFING REQUEST

	FY 1994 ACTUAL USAGE	FY 95 MINUS FY 94	FY 1995 ESTIMATE	FY 96 MINUS FY 95	FY 1996 REQUEST
ENERGY and WATER SUBCOMMITTEE					
HEADQUARTERS	6,709	260	6,969	388	7,357
FIELD	10,898	504	11,402	−162	11,240
SUBCOMMITTEE TOTAL	17,607	764	18,371	226	18,597
INTERIOR SUBCOMMITTEE					
HEADQUARTERS	1,337	92	1,429	−25	1,404
FIELD	894	−45	849	−11	838
SUBCOMMITTEE TOTAL	2,231	47	2,278	−36	2,242
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

DEPARTMENT OF ENERGY FY 1996 CONGRESSIONAL STAFFING REQUEST

APPROPRIATION	FY 1994 USAGE	FY 1995 – FY 1994	FY 1995 ESTIMATE	FY 1996 – FY 1995	FY 1996 REQUEST
ENERGY SUPPLY R&D	1,290	35	1,325	23	1,348
HEADQUARTERS	1,118	18	1,136	23	1,159
FIELD	172	17	189	0	189
URANIUM ENRICHMENT	66	−21	45	9	54
HEADQUARTERS	33	−23	10	9	19
FIELD	33	2	35	0	35
ISOTOPE PRODUCTION & DIST	6	0	6	6	12
GENERAL SCIENCE & RESEARCH	148	−7	141	−33	108
HEADQUARTERS	87	−28	59	−3	56
FIELD	61	21	82	−30	52
WEAPONS ACTIVITIES	2,316	−144	2,172	58	2,230
HEADQUARTERS	324	−49	275	111	386
FIELD	1,992	−95	1,897	−53	1,844
ENVIRONMENTAL REST & WASTE MGT	2,067	1133	3,200	716	3,916
HEADQUARTERS	633	324	957	277	1,234
FIELD	1,434	809	2,243	439	2,682
MATERIALS SUPPORT	1,266	−99	1,167	−453	714
HEADQUARTERS	604	−57	547	−64	483
FIELD	662	−42	620	−389	231
DEPARTMENTAL ADMINISTRATION	3,034	35	3,069	−2	3,067
HEADQUARTERS	1,873	47	1,920	4	1,924
FIELD	1,161	−12	1,149	−6	1,143
INSPECTOR GENERAL	358	−2	356	0	356
ALASKA POWER ADMIN	33	2	35	0	35
BONNEVILLE POWER ADMIN	3,596	−156	3,440	−115	3,325
SOUTHEASTERN POWER ADMIN	42	−1	41	0	41
SOUTHWESTERN POWER ADMIN	198	−2	196	−1	195
WAPA – OPERATION & MAINT	1,281	−23	1,258	−6	1,252
WAPA – COLORADO RIVER BASIN	223	−14	209	−1	208
FED ENERGY REGULATORY COMM	1,434	29	1,463	−10	1,453
NUCLEAR WASTE FUND	249	−1	248	35	283
HEADQUARTERS	239	1	240	35	275
FIELD	10	−2	8	0	8
CLEAN COAL TECHNOLOGY	85	1	86	−10	76
HEADQUARTERS	22	2	24	−1	23
FIELD	63	−1	62	−9	53
FOSSIL ENERGY R&D	751	−25	726	0	726
HEADQUARTERS	151	0	151	1	152
FIELD	600	−25	575	−1	574
NAVAL PET & OIL SHALE RES	84	−8	76	0	76
HEADQUARTERS	18	1	19	0	19
FIELD	66	−9	57	0	57
ENERGY CONSERVATION	487	57	544	0	544
HEADQUARTERS	448	71	519	0	519
FIELD	39	−14	25	0	25
EMERGENCY PREPAREDNESS	65	2	67	−1	66
ECONOMIC REGULATION	135	−5	130	−20	110
STRATEGIC PETROL RESERVE	164	2	166	−1	165
HEADQUARTERS	38	−2	36	0	36
FIELD	126	4	130	−1	129
ENERGY INFORMATION ACTIVITIES	460	23	483	−4	479
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Energy Supply Research and Development					
Solar Energy	242.3	242.3	292.2	292.2	326.4
Geothermal	23.0	23.0	37.8	37.8	37.0
Hydrogen Research	9.6	9.6	9.6	9.6	7.3
Hydropower	1.0	1.0	4.9	4.9	1.0
Electric Energy Systems	37.0	37.0	38.5	38.5	41.0
Energy Storage Systems	7.2	7.2	5.8	5.8	5.9
Policy and Management - CE	3.8	3.8	4.8	4.8	4.7
Nuclear Energy R&D	227.3	227.3	199.2	199.2	201.1
Termination Cost	104.7	104.7	69.7	69.7	72.6
Isotope Support	—	—	19.5	19.5	25.4
Soviet Designed Reactor Safety	30.0	30.0	—	—	78.8
Russian Replacement Power Initiative	—	—	—	—	5.0
Civilian Waste R&D	0.7	0.7	0.7	0.7	0.7
Environment, Safety and Health					
Environment Research and Development	141.1	141.1	126.7	126.7	149.6
Nuclear Safety Policy	14.7	14.7	17.2	17.2	17.2
Environmental Analysis	9.6	—	—	—	—
Scientific & Engineering Recruitment, Training & Dev.	4.9	—	—	—	—
Total, Environment, Safety and Health	170.3	155.8	143.9	143.9	166.8
Biological and Environmental Research	395.2	395.2	436.7	436.7	431.7
Fusion Energy	328.6	328.6	368.4	368.4	366.0
Basic Energy Sciences	757.8	757.8	733.9	733.9	811.4
Advanced Neutron Source	16.2	16.2	20.8	20.8	—
Energy Research Analyses	3.6	3.6	3.4	3.4	3.5
Laboratory Technology Transfer	37.4	37.4	56.9	56.9	58.8
Advisory and Oversight	13.4	12.7	12.5	12.5	9.8
Multi-Program Energy Laboratories	40.1	40.1	43.0	43.0	51.0
Policy and Management - ER	3.1	3.1	2.2	2.2	2.2
Small Business Innovation Research (SBIR)	54.0	54.0	—	—	—
University and Science Education Programs	55.3	55.3	69.6	69.6	55.4
Technical Information Management Program	14.7	14.7	16.1	16.1	17.4
Technology Partnership	—	—	—	—	3.1
In-House Energy Management	25.3	25.3	30.7	30.7	28.8
Liquified Gaseous Spill Test Facility	1.3	1.3	—	—	—
Environmental Rest. & Waste Mgmt. (non-defense)	693.0	693.0	731.7	731.7	713.0
Subtotal, Energy Supply Research and Development	3,295.9	3,280.7	3,352.5	3,352.5	3,525.8
Prior Year Balances & Other Adjustments	-120.7	-120.7	-37.9	-37.9	-129.3
Total, Energy Supply Research and Development	3,175.2	3,160.0	3,314.6	3,314.6	3,396.5

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Energy Supply, Research and Development Activities

For expenses of the Department of Energy activities including the purchase, construction and acquisition of plant and capital equipment and other expenses incidental thereto necessary for energy supply, research and development activities, and other activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; purchase of passenger motor vehicles (not to exceed 25, of which 19 are for replacement only), [$3,314,548,000] $3,506,035,000, to remain available until expended[: *Provided*, That the Secretary of Energy may transfer available amounts appropriated for use by the Department of Energy under title III of previously enacted Energy and Water Development Appropriations Acts into the Isotope Production and Distribution Program Fund, in order to continue isotope production and distribution activities; *Provided further*, That the authority to use these amounts appropriated is effective from the date of enactment of this Act: *Provided further*, That fees set by the Secretary for the sale of isotopes and related services shall hereafter be determined without regard to the provisions of Energy and Water Development Appropriations Act (Public Law 101-101): *Provided further*, That amounts provided for isotope production and distribution in previous Energy and Water Development Appropriations Acts shall be treated as direct appropriations and shall be merged with funds appropriated under this head.]: *Provided*, That the amount appropriated herein reflects anticipated savings of $50,000,000 associated with implementing the recommendations of the Task Force on Alternative Futures for the Department of Energy National Laboratories: *Provided further*, That in the event some portion of savings are achieved in other accounts under this title, amounts equal to such savings may be transferred to this account without regard to the requirements or limitations of section 302 of Public Law 102-377.

EXPLANATION OF CHANGE

The proposed deletion is to eliminate the one-time provisions for Isotopes Production activities. The proposed language authorizes transfer of anticipated saving among title III accounts.

Solar and Renewable Energy

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

SOLAR AND RENEWABLE ENERGY

VOLUME 2

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OVERVIEW

SOLAR AND RENEWABLE ENERGY

I. Introduction

The FY 1996 budget request for Solar and Renewable Energy reflects the Administration's continued commitment to research and development of promising technologies that will stimulate near-term economic growth and increase the environmentally sound production and use of sustainable domestic energy resources. In executing these programs, the Office of Energy Efficiency and Renewable Energy (EE) seeks to work with industry to strengthen the technology base leading to new, commercially viable products and processes. EE's programs address all areas of the energy sector -- from production to delivery to end-use. Program activities range from basic research at universities and national laboratories, to applied research and development, and to proof-of-concept, joint venture projects with industry. Passage of the Energy Policy Act of 1992 represents a rededication to solar and renewable energy; the proposed FY 1996 budget will support a strong, balanced program that will contribute toward strengthening the Nation's economy and energy security, reducing emissions, promoting energy efficiency, and increasing competitiveness and Federal technology transfer to the U.S. private sector.

II. Planning and Program Summary

UTILITIES

Historical Perspective

Since the early 1900's, U.S. growth in electricity consumption has been virtually continuous. Between World War II and 1972, electric demand grew at an annual rate of 8.3 percent, and utilities built new generating capacity and transmission and distribution equipment, as required, to meet demand and ensure reliable operation.

In the mid 1970s, large oil price increases and high inflation rates upset the by now established pattern of increasing demand and increasing investments in power plants. The cost of constructing large power plants were raised sharply due to inflation, high interest rates, delays to accommodate a growing number of reviews, and expensive new environmental regulations. Vulnerability to fuel supply disruptions became a concern as foreign sources became less dependable. Utility commissions, reviewing the prudence of major utility construction investments, denied recovery of billions of dollars worth of construction expenditures, forcing shareholders to shoulder much of the cost of construction cost overruns and abandoned projects. As the requirements of the marketplace were changing during this period, the foundation for change in the utility sector was also being laid.

The Electric Industry's Transition Phase

Change in the utility sector has reflected itself in several ways (see Exhibit 1 on page 2). Given a steady but more modest 2.8% demand growth in recent years, the pace of investment by utilities in new generation has slowed (offset only partly by non-utility investment in generation). Investment in network facilities such as transmission, distribution, and control systems has increased. Investment in demand side management programs (DSM) and in other forms of energy efficiency improvement has risen dramatically, although it still remains a relatively small fraction of total utility spending. Both utilities and electric consumers have begun to regard generated electricity as a "resource" to be used as efficiently as possible.

Accompanying these system changes are shifts in electricity markets that are likely to be even more significant. These involve the introduction of new electricity supply entities, a loosening of regulatory controls for some suppliers, increased wheeling opportunities, and other actions that have the same

net effect, namely, increasing competition in electricity markets. As analysts debate the preferred paths for enlightened managements to follow, virtually all agree that, to remain healthy and viable, utilities must adjust to the altered, and still altering, operating environment of the 1990s. In full recognition of these events, the utility sector is seeking optimum approaches for adapting to changes from high growth to lower growth and from tight regulation to a more competitive environment.

The foregoing not withstanding, the demand for electricity and the electricity fraction of total national energy consumption will both continue to increase. The Department projects that total electric demand will increase some 50% from current levels, to over 45 quads of primary energy per year in 2010, despite beneficial impacts of demand-side management programs. The total capacity required to meet demand is forecast to increase by approximately 100 GW in the 1990s and by another 100 GW before 2010. Utilities and non-utility suppliers will be forced to invest approximately $200 billion between now and 2010 to meet this demand. This level of capital investment is more than 55 percent greater than that of the entire investor-owned utility industry today. In addition, about 340 GW of existing capacity will undergo life-extension or repowering by 2010, at an additional cost of $50 billion to $85 billion. Faced with this staggering capital requirement and a shifting regulatory perspective, utilities and other interested parties are looking for new solutions to the nation's energy needs -- new ways of planning, financing, building and operating the electric system of the future. The planning, management, and implementation of the Department's renewable energy and supporting technology programs must be similarly attuned to these same trends.

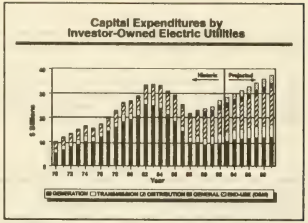

Exhibit 1

Major Drivers of Utility Sector Decisionmaking

Movement toward a new utility environment is well underway. The Public Utilities Regulatory Policy Act of 1978 opened the door to industry change. More recently, the National Energy Policy Act of 1992 (EPACT) appears to have set the changes into full motion. A major element in EPAct is the reform of the Public Utility Holding Company Act (PUHCA). This reform relaxes the restrictions on the corporate structure and finance of companies providing energy services, thereby expanding the number of players able to generate electricity and promoting a more competitive marketplace. The resulting power producing industry will include not only traditional utilities, but also non-traditional utility owned suppliers and non-utility suppliers that had previously been forestalled from entering the market by the burdens associated with PUHCA compliance.

In addition, EPAct increased access to the electric transmission grid for non-utility generators and utilities seeking to wheel power into non-native markets where they could potentially compete with the local utility. In doing so, EPAct provided added impetus to a trend that had already begun to emerge in the industry - the movement of bulk power across the transmission system such that purchased power had become a commonly considered utility option for meeting growth. The new impetus appears likely to move wheeled purchases into the consumer arena as well. Large industrial companies have been the first to attempt to exercise their market power to obtain electricity service benefits from competing suppliers.

However, the provisions of EPAct may not be the final word on competition in the utility industry. The California Public Utilities Commission (CPUC) recently proposed a plan that provides that by 2002 all electric customers in California would have direct access to retail wheeling of electricity. In other words, each utility customer would have choices of an electricity supplier. This would scrap traditional cost-of-service regulation in favor of control through rate caps and performance-based regulation. Michigan is also examining the potential effects of retail wheeling and has proposed an "experiment" to help understand its implications. Proposals such as these threaten to make it more difficult for a utility, or any other service provider, to absorb increasing costs while simultaneously competing for customer loyalty and market share. While the California and Michigan proffers are intended to increase customer choice and enhance customer welfare, they will also add complexity to and make greater demands on the nation's entire transmission and distribution system.

As the costs of transmission and distribution become a larger portion of utility investment and the difficulties in siting major new transmission and distribution facilities continue, there will be a need to develop market-based approaches that allocate these costs among users. The transmission and

distribution system will be increasingly regarded as an asset that must be carefully managed to maximize revenue and return on investment. At the same time, care will be required to assure that reliability is not compromised.

Market-based approaches are also being used to lessen the costs associated with reducing utility emissions, as part of an overall trend away from prescriptive regulatory approaches to pollution reduction. The sulfur dioxide (SO_2) allowance trading provisions of the Clean Air Act Amendments of 1990 are creating a market for emissions that are shifting the value of competing technologies. Explicit allowance set-asides for renewable energy and efficiency investments provide a direct monetary boost to these technologies, but are only a small part of the overall impact of this approach. Similar approaches are being applied by utility commissions for other types of emissions such as nitrogen oxides (NOx) and carbon dioxide (CO_2).

The final major element impacting utility decisionmaking is a broadening of technology choice. Utilities and their regulators are faced with increased options for meeting the demands of generation, transmission, distribution and end-use. Many new technologies have already advanced to the point where they are competitive with traditional investments. For example, advanced information and metering technologies for distribution systems are nearing the point where real-time pricing and management of electricity use will be possible, reducing end-use consumption and therefore the need for new generation. Several renewable generation technologies, especially wind, geothermal, and biomass power, have reached the point where, in certain circumstances, they are credible competitors in the generation arena. In turn, future advances in areas such as high-temperature superconductivity will add to the attractiveness of many of these options.

Contribution of Emerging Technologies

Given growing competition and therefore growing cost consciousness, stakeholders are encouraging regulators and utilities to explore alternatives to new traditional generation including: 1) renewable energy; 2) greater use of the transmission system to facilitate the purchase and transport of power; 3) distribution options that improve the use of existing utility assets and provide utilities with increased responsiveness and influence over end-use demand; and 4) greater use of efficiency and DSM measures.

The need for new base load plants will be largely determined by the extent to which life-extension technologies for existing plants, efficiency investments, and more effective use of the transmission grid for transfers can meet base load requirements. New base load generation options include integrated gasification combined-cycle (IGCC) coal plants and renewable energy systems such as geothermal and biomass.

Intermediate and peaking units represent the bulk of the near-term generation market. These units are typically built in smaller increments, and generate electricity at higher cost due to lower utilization and efficiencies. The resource and generating characteristics of solar-based energy systems such as photovoltaics and solar thermal mean that they tend to meet daytime peak demand needs, and thus compete with the higher costs of intermediate and peaking units. Dispersed grid applications that satisfy localized peak demand and thus reduce new transmission and distribution system requirements are attractive niche markets for modular, solar-based generation technologies.

Future transmission technologies, offering higher efficiency or greater throughput capacity, include high-phase-order AC, advanced high-voltage DC, and various control, conversion, and system protection approaches. All will contribute to increased wheeling. Various energy resources dispersed across the distribution system, such as energy storage systems, photovoltaics, wind farms, and fuel cells, can provide system benefits beyond those of energy and capacity (e.g., frequency or voltage regulation, substation overload relief), thereby transforming what have traditionally been considered generation options into distribution options. End-use technologies can free up capacity that can be used to supply other needs, thereby avoiding investment in new supply (and possibly new transmission). These end-use technologies include building control systems, real-time metering and pricing, utility controlled DSM measures, improved industrial process efficiency, and expanded customer generation.

Given increased choices, utility planning will become more complex. Analysis of the choices will require a sophisticated approach to evaluation and decision making. The need for innovative management of disparate generating sources, sophisticated dispatch strategies, operational data, and real-time feedback and control will become critical. However, the requirement for integrated command, control, communications and information in the operating system will have to be accomplished in an environment characterized by more widely dispersed decision-making authority and greater competition. A major issue is whether a competition-oriented utility industry -- despite its complexities -- can provide efficient and low cost solutions to the Nation's growing electricity needs, without sacrificing today's reliability and flexibility.

The Role of the Office of Utility Technologies

The Office of Utility Technologies is responding to the mandates of EPAct and the emerging requirements of the increasingly competitive utility industry. The Office's renewable energy programs are now characterized by a balanced portfolio of technology push and market pull activities. In the Renewable Energy Multiyear Plan, published in September 1994 in response to EPAct section 2111, the program commits itself to the pursuit of aggressive deployment/field test/market conditioning activities to promote commercialization and economic development. OUT programs have been restructured over the past two years to achieve this new balance and to implement other philosophical and legislative mandates of EPAct. In support of EPAct, the Climate Change Action Plan is a coordinated effort to bring together the program's stakeholders to leverage Federal actions with additional private resources. For example, market mobilization collaboratives are being formed to bring several near-term renewable technologies to the marketplace over the next several years. Similarly, the newly launched Climate Challenge program is bringing electric utilities together in a voluntary program to explore opportunities to lessen the impact of utility operations on the environment. To-date, more than 800 utilities have indicated their willingness to participate in this program and to commit resources to its implementation. The end result is added leverage for the programs supported by the Solar and Renewable Energy appropriation.

OUT's programs have also been tailored to contribute toward achieving three of the Department's key goals: 1) the creation of high wage jobs; 2) an improved national and global environment; and 3) reduced vulnerability to supply disruptions. The potential for renewable energy and energy efficiency use in U.S. and overseas markets provides U.S. industry important new market opportunities. The choice of renewable technologies over traditional fossil fuel technologies will significantly reduce the environmental impacts of power generation. Finally, the reliance upon indigenous resources not subject to foreign control provides security against fuel price increases and supply disruptions.

TRANSPORTATION

The Transportation Sector is still 97 percent dependent on oil. Foreign oil is currently needed to meet over 50 percent (highest point ever) of our total petroleum requirements. As events from the Persian Gulf during 1990-1991 underscored, this reliance on foreign supply can have a significant impact on the U.S. economy. Recent passage of the Clean Air Act Amendments is requiring the use of new fuels to deal with the Nation's carbon monoxide and ozone non-attainment areas, including the use of oxygenates, such as methanol, ethanol, and their ethers. Biomass-based alcohol fuels can be used effectively in the transportation sector to make an important contribution to the Nation's energy security, economic productivity and growth, and environmental objectives.

The Biomass Fuels program seeks to develop innovative technologies to produce renewable transportation fuels from biomass at competitive costs, without the need for subsidies. The two major research thrusts include biochemical and thermochemical conversion processes. Biochemical conversion research is developing efficient and cost-effective technology for ethanol production, while thermochemical conversion research is developing competitive biomass technologies for production of methanol, ethers, and biodiesel. The proposed program supports major process development units for ethanol fuel; these are critical to reducing the cost of production, attracting major industrial participation, and decreasing outyear R&D requirements.

INDUSTRY

Solar energy can be used by industry in achieving national objectives of secure energy supplies, enhanced environmental security, and increased energy and economic efficiency. In 1991, industry consumed 29.66 quads of energy, 36 percent of the total consumed in the U.S. This total is expected to grow to 50 quads by the year 2030. Initial market studies have indicated that solar energy could provide up to 4 quads of this energy for industry as the cost of the technology becomes competitive and institutional barriers are overcome.

The proposed FY 1996 solar industrial program has three themes: the detoxification of hazardous wastes, the production of industrial heat, and advanced industrial processing applications. Solar detoxification uses the solar energy to address serious environmental problems of soil and water contamination and hazardous air emissions. Industrial heat, the largest potential energy market for the technology, uses solar energy converted to hot air, water, or steam for a wide variety of industrial processes. The Advanced Industrial Applications part of the program seeks to broaden the impact of solar energy by developing new industrial applications such as materials processing. Market penetration of solar technology for these applications will provide early niche markets and a production base on which the solar industry can expand to other industrial applications, thus widening the market and providing a solar supplement for fossil fuels. The program has entered into cost-sharing arrangements with the Environmental Protection Agency, the Department of Defense, and other DOE programs to leverage program funding. Cooperative activities with DOE's Federal Energy Management Program support Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities. The program assists the solar equipment supply industry with prefeasibility studies that identify end-users for viable solar heat systems. It also pursues cost-shared solar projects and programs with states such as California, Florida, and Virginia, to increase the use of solar energy in State facilities. These activities are designed to assist industry in reducing the cost of the technology

and overcoming institutional barriers. Technology development and economies realized through advanced manufacturing will be supported. The program will also use the newly designated DOE High Flux Solar Furnace User Facility at NREL to develop advanced solar industrial applications which use the sun's energy concentrated up to 50,000 times. This high flux can be applied to industrial uses, such as providing diamond-like coatings on materials and metals bonded to ceramic substrates, to give American industry world-class technology.

The Industry Sector portion of the proposed FY 1996 Biofuels Energy Systems budget includes the biochemical conversion of municipal solid waste to methane, which is a premium clean fuel. This process is compatible with and assists recycling, is environmentally sound, and is supported by the environmental community. It includes the recovery and use of the methane produced in existing landfills where, if not captured and reused, is a significant source of greenhouse gas emission. Currently about 0.09 quads of methane is recovered and reused from landfills in the U.S. in significant measure as a result of previous Department efforts. The current program is designed to expand such recovery to 0.5 quads of the 2 plus quad potential by 2010.

As part of the Bioelectric Initiative, the Industry Sector program will include a program to modify industrial-sized gas turbines for use with biomass-derived fuels.

SOLAR BUILDING TECHNOLOGIES

It is estimated that more than a million solar water heating systems have been installed in the United States. Most of these systems were installed in the late 1970s and early 1980s. Although many of these earlier systems suffered from design and installation problems, the reliability of current systems has improved dramatically. Active solar space and water heating can help reduce the use of energy in the building sector, since space and water heating makes up approximately 57 percent of residential primary energy use and 36 percent of commercial building primary use. As a result of recent program activities, utility sector interest in solar domestic hot water (SDHW) systems as a demand-side management measure has grown dramatically in the last few years, with more than 70 utilities now considering the possibility of a SDHW demand-side initiative. Today, the typical residential SDHW system approximates a 2-kilowatt power system with an expected service life of 10 to 15 years and with considerably improved cost-effectiveness. The impact of a single SDHW demand-side management initiative by the Sacramento Municipal Utility District was approximately a 25 percent reduction in the installed system cost resulting from the economies of scale. The solar program is currently working with more than 70 utilities to accelerate the utilization of SDHW in their respective demand-side management programs, with approximately 20 utilities considering the launch of such an initiative in the near future. It is expected that such utility initiatives will expand from the currently planned initiatives of approximately 75 megawatts of power to approximately 200 megawatts in 1994, and more than a gigawatt of power per year in new initiatives within the next few years with continued program support.

U.S. INTERNATIONAL COMPETITIVENESS

International market development is needed to strengthen support for U.S. renewable energy and energy efficiency products and services in rapidly expanding global markets. Such efforts are required to gain maximum benefit from renewable energy markets that exist today, to counter the government efforts of foreign competitors and to retain a preeminent role for the U.S. in the energy technologies of the future. Every $1 million in export sales creates 36 U.S. jobs and $3 million in U.S. economic activity.

Internationally, energy demand is expected to grow dramatically, especially in developing countries where electrification efforts are being pursued rapidly as a component of economic development. As developing countries seek to deploy new energy technologies, the already intense international trade competition among developed, exporting countries is expected to accelerate. Solar energy technologies are expected to play an increasing role in developing nations' energy expansion due to their modularity, widespread availability of the solar resource, and flexibility in providing both remote and grid connected power and industrial heat. U.S. competitors have perceived this opportunity and have correspondingly increased their solar R&D funding and export assistance. Opportunities for U.S. gains in international competitiveness will depend in part upon the strength of the research base developed by the DOE solar energy program.

The proposed FY 1996 U.S. International Competitiveness budget provides for international market development and outreach programs to facilitate the entry of U.S. renewable energy products and services into foreign markets and to acquaint potential users with new and available U.S. technology applications. The Committee on Renewable Energy Commerce and Trade (CORECT) focuses the activities of the federal export assistance agencies to better assist the foreign sales efforts of U.S. renewable energy firms. CORECT's overall international strategy, developed in conjunction with the U.S. renewable energy industry, provides the context within which other specific export promotion activities are proposed. In FY 1996, expanded funding is proposed for Americas 21st Century to target international market development and cost-shared joint venture support to emerging markets in Latin America and the Caribbean. New initiatives are proposed in FY 1996 to focus on Asian, African and Eastern European markets, and support will be provided for the market preparation efforts of the Department's Country Studies program. Also, increased support for the U.S. Initiative on Joint Implementation (USIJI) program is proposed in FY 1996.

The FY 1996 budget request for U.S. International Competitiveness provides not only for programs to facilitate the entry of U.S. renewable energy products and services into foreign markets, but also for increasing the U.S. renewable energy industry's competitiveness through accelerated, market-driven commercialization of renewable energy technologies in domestic as well as foreign markets. In addition, it provides for ongoing technical assistance and educational activities to build our nation's future competitiveness in the world community.

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no significant growth in FTEs beyond the FY 1995 level despite major program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

Department of Energy
FY 1996 Congresssional Budget Request
Renewable Energy
(dollars in thousands)

PROGRAM	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Energy and Water Development Committee			
I. Solar Energy			
A. Solar Building Technology Research	$ 4,804	$ 4,610	$ 4,657
Operating Expense	4,610	4,505	4,471
Capital Equipment	194	105	186
B. Photovoltaic Energy Systems	74,881	87,527	88,129
Operating Expense	71,291	86,527	84,159
Capital Equipment	3,590	1,000	3,970
C. Solar Thermal	31,365	31,458	33,943
Operating Expense	30,871	30,758	33,248
Capital Equipment	494	700	695
1. Utility Sector	24,026	23,901	26,065
2. Industry Sector	7,339	7,557	7,878
D. Biofuels Energy Systems	55,830	59,643	80,380
Operating Expense	52,822	56,734	78,296
Capital Equipment	3,008	2,909	2,084
1. Utility Sector - Biomass Systems	9,816	18,309	33,220
2. Transportation Sector - Biomass Fuels	40,166	35,003	38,159
3. Industrial Sector - Municipal Solid Wastes (MSW)	1,618	1,522	5,061
4. Technical and Financial Assistance - Regional Biomass Program	4,230	4,809	3,940
E. Wind Energy Systems	29,151	47,139	49,820
Operating Expense	25,367	46,139	48,331
Capital Equipment	$ 3,784	$ 1,000	$ 1,489

Department of Energy
FY 1996 Congresssional Budget Request
Renewable Energy
(dollars in thousands)

PROGRAM	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
F. Ocean Energy Systems	$ 959	$ 0	$ 0
Operating Expense	959	0	0
Capital Equipment	0	0	0
G. Solar International Program	5,036	9,087	29,154
H. Solar Technology Transfer	20,533	22,406	17,758
I. Solar Program Support (planning)	4,827	12,199	7,345
J. Resource Assessment	2,208	3,950	4,665
Operating Expense	2,014	3,558	4,268
Capital Equipment	194	392	397
K. Solar Energy Program Direction	6,987	8,200	9,460
1. Utility Sector - Program Direction	4,947	4,580	5,840
2. Golden Field Office	2,040	3,620	3,620
L. National Renewable Energy Laboratory	5,758	5,963	6,000
1. Facility Construction	3,086	2,750	5,500
2. General Plant Projects	1,677	1,665	120
3. General Purpose Equipment	995	1,548	380
Total Solar Energy Program Level	242,339	292,182	331,311
Estimate for Review of Uncosted	0	0	(4,888)
Total FY 1996 Budget Request	$ 242,339	$ 292,182	$ 326,423

Department of Energy
FY 1996 Congresssional Budget Request
Renewable Energy
(dollars in thousands)

PROGRAM	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
II. Geothermal Systems - Utility Sector			
A. Geothermal Technology Development	$ 21,166	$ 35,921	$ 36,130
B. Capital Equipment	873	886	397
C. Geothermal Program Direction	970	1,000	1,000
Total Geothermal Program Level	23,009	37,807	37,527
Estimate for Review of Uncosted	0	0	(555)
Total FY 1996 Budget Request	23,009	37,807	36,972
III. Hydropower - Utility Sector			
A. Hydropower Development	914	4,756	904
B. Program Direction	125	90	90
Total Hydropower Program Level	1,039	4,846	994
Estimate for Review of Uncosted	0	0	(14)
Total FY 1996 Budget Request	1,039	4,846	980
IV. Hydrogen			
A. Hydrogen Research	9,590	9,392	7,444
B. Capital Equipment	0	224	0
Total Hydropower Program Level	9,590	9,616	7,444
Estimate for Review of Uncosted	0	0	(110)
Total FY 1996 Budget Request	$ 9,590	$ 9,616	$ 7,334

Department of Energy
FY 1996 Congresssional Budget Request
Renewable Energy
(dollars in thousands)

PROGRAM	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
V. Electric Energy Systems			
A. Electric Field Effects (Energy Management)	$ 9,589	$ 13,462	$ 9,924
B. Reliability Research (Energy Management)	5,848	5,962	6,153
C. Systems and Materials Research	19,875	18,270	24,712
D. Capital Equipment	873	0	0
E. Electric Energy Systems Program Direction	825	850	850
Total Electric Energy Systems Program Level	37,010	38,544	41,639
Estimate for Review of Uncosted	0	0	(615)
Total FY 1996 Budget Request	37,010	38,544	41,024
VI. Energy Storage Systems			
A. Utility Battery Storage (Stationery Batteries)	5,538	5,482	5,656
B. Thermal Storage	1,053	0	0
C. Capital Equipment	291	0	0
D. Energy Storage Program Direction	340	350	350
Total Energy Storage Program Level	7,222	5,832	6,006
Estimate for Review of Uncosted	0	0	(88)
Total FY 1996 Budget Request	7,222	5,832	5,918
VII. Policy and Management - ESR&D	3,763	4,817	4,817
Total Policy & Management Program Level	3,763	4,817	4,817
Estimate for Review of Uncosted	0	0	(71)
Total FY 1996 Budget Request	3,763	4,817	4,746
Total Solar & Renewables Program Level	323,972	393,644	429,738
Estimate for Review of Uncosted and Other	0	(4,267)	(6,341)
Total FY 1996 Budget Request	$ 323,972	$ 389,377	$ 423,397

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Solar Energy

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Solar Building Technology Research					
Operating Expenses	$ 4,610	$ 4,505	$ 0	$ 4,505	$ 4,471
Capital Equipment	194	187	-82	105	186
Subtotal, Solar Building Technology Research	$ 4,804	$ 4,692	$ -82 e/	$ 4,610	$ 4,657
Photovoltaic Systems					
Operating Expenses	$ 71,291	$ 90,000	$ -3,473	$ 86,527	$ 84,159
Capital Equipment	3,590	1,000	0	1,000	3,970
Subtotal, Photovoltaic Systems	$ 74,881	$ 91,000	$ -3,473 e/	$ 87,527	$ 88,129
Solar Thermal Energy Systems					
Operating Expenses	$ 30,871	$ 32,000	$ -1,242	$ 30,758	$ 33,248
Capital Equipment	494	700	0	700	695
Subtotal, Solar Thermal Energy Systems	$ 31,365	$ 32,700	$ -1,242 e/	$ 31,458	$ 33,943
Biofuels Energy Systems					
Operating Expenses	$ 52,822	$ 59,152	$ -2,418	$ 56,734	$ 78,296
Capital Equipment	3,008	2,960	-51	2,909	2,084
Subtotal, Biofuels Energy Systems	$ 55,830	$ 62,112	$ -2,469 e/	$ 59,643	$ 80,380
Wind Energy Systems					
Operating Expenses	$ 25,367	$ 48,000	$ -1,861	$ 46,139	$ 48,331
Capital Equipment	3,784	1,000	0	1,000	1,489
Subtotal, Wind Energy Systems	$ 29,151	$ 49,000	$ -1,861 e/	$ 47,139	$ 49,820
Ocean Energy Systems					
Operating Expenses	$ 959	$ 0	$ 0	$ 0	$ 0
Solar International Programs					
Operating Expenses	$ 5,036	$ 9,250	$ -163 e/	$ 9,087	$ 29,154

LEAD TABLE - Solar Energy (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Solar Technology Transfer					
Operating Expenses	$ 20,533	$ 16,090	$ 6,316 c/	$ 22,406	$ 17,758
Solar Program Support					
Operating Expenses	$ 4,827	$ 5,407	$ 6,792 d/	$ 12,199	$ 7,345
Resource Assessment					
Operating Expenses	$ 2,014	$ 3,700	$ -142	$ 3,558	$ 4,268
Capital Equipment	194	400	-8	392	397
Subtotal, Resource Assessment	$ 2,208	$ 4,100	$ -150 e/	$ 3,950	$ 4,665
National Renewable Energy Laboratory					
Capital Equipment	$ 995	$ 1,548	$ 0	$ 1,548	$ 380
Construction	4,763	4,415	0	4,415	5,620
Subtotal, National Renewable Energy Laboratory	$ 5,758	$ 5,963	$ 0	$ 5,963	$ 6,000
Program Direction					
Operating Expenses	$ 6,987	$ 8,200	$ 0	$ 8,200	$ 9,460
Subtotal, Solar Energy	$ 242,339 a/	$ 288,514	$ +3,668 e/	$ 292,182	$ 331,311
Adjustment	-4,308 b/	0	-3,193 f/	-3,193 f/	-4,888 g/
TOTAL	$ 238,031	$ 288,514	$ + 475	$ 288,989	$ 326,423
Summary					
Operating Expenses	$ 221,253	$ 276,304	$ 0	$ 277,019	$ 316,490
Capital Equipment	12,015	7,795	0	7,555	9,201
Construction	4,763	4,415	0	4,415	5,620
Total Program	$ 238,031	$ 288,514	$ 0	$ 288,989	$ 331,311
Staffing (FTEs)	108	97	0	97	108

LEAD TABLE - Solar Energy (cont'd)

Authorizations:
P.L. 94-163, "Energy Policy and Conservation Act" (EPCA) (1975)
P.L. 94-385, "Energy Conservation and Production Act" (ECPA) (1976)
P.L. 95-618, "Energy Tax Act of 1978"
P.L. 95-619, "National Energy Conservation Policy Act" (NECPA) (1978)
P.L. 95-620, "Powerplant and Industrial Fuel Use Act of 1978"
P.L. 96-294, "Energy Security Act" (1980)
P.L. 100-12, "National Appliance Energy Conservation Act of 1987"
P.L. 100-615, "Federal Energy Management Improvement Act of 1988"
P.L. 101-218, "Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989"
P.L. 101-549, "Clean Air Act Amendments of 1990"
P.L. 101-575, "Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990"
P.L. 102-486, "Energy Policy Act of 1992"
P.L. 95-91, "Department of Energy Organization Act" (1977)

a/ Reflects adjustment to Conference Mark of $-1,107 for M&O Contractor Salary Freeze: $-7,481 for the FY 1994 Rescission, P.L. 103-211; and $-1,422 for approved reprogramming 94-R-4 for FY 1994 Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) activities. Total: $+10,010.

b/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1994 Energy and Water Development Appropriations Act, P.L. 103-126.

c/ Reflects adjustment of $+6,600 in accordance with Congressional report language for the Navajo Transmission Project; less ESR&D General Reductions of $-284. Total: $+6,316

d/ Reflects adjustment of $7,000 in accordance with Energy and Water Development House Report 103-533 for the Renewable Energy Production Incentive (REPI) as authorized by EPACT Section 1212, less -$112 from Solar Program Support and Miscellaneous Adjustments of $-96. Total: $+6,792.

e/ Reflects the following adjustments: $-82 for ESR&D General Reduction. $-1,603 for ESR&D General Reduction and $-1,870 for the Renewable Energy Production Incentive totaling $-3,473. $-577 ESR&D General Reduction and $-665 for the Renewable Energy Production Incentive totaling $-1,242. $-1,093 for the ESR&D General Reduction and $-1,376 for the Renewable Energy Production Incentive totaling $-2,469. $-864 for the ESR&D General Reduction and $-997 for the Renewable Energy Production Incentive totaling $-1,861. $-163 for the ESR&D General Reduction. See footnote c/. See footnote d/. $-73 for ESR&D General Reduction and $-77 for the Renewable Energy Production Incentive totaling $-150. Total $+3,668.

f/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1995 Energy and Water Development Appropriation Act, P.L. 103-316.

g/ In support of DOE efforts for prudent management of financial resources, the Office of Energy Efficiency and Renewable Energy is conducting a detailed review of uncosted balances. This is in accordance with the Departmental objective of reducing excessive uncosted balances. Estimates of approximately $6 million have been identified and the savings have been applied pro-rata as an offset to the FY 1996 budget. Once the review is completed, adjustments will be made to reflect actual savings. Pro-rata amount for Solar Energy is $-4,888.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Solar Energy

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 27,840	$ 32,706	$ 0	$ 32,706	$ 34,675
Los Alamos National Laboratory	0	100	0	100	500
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 27,840	$ 32,806	$ 0	$ 32,806	$ 35,175
CHICAGO OPERATIONS OFFICE					
Brookhaven National Lab	$ 400	$ 400	$ 0	$ 400	$ 400
GOLDEN FIELD OFFICE					
National Renewable Energy Lab	$ 140,283	$ 153,810	$ 0	$ 153,810	$ 165,340
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 4,450	$ 4,630	$ 0	$ 4,630	$ 4,934
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 750	$ 300	$ 0	$ 300	$ 2,000
ALL OTHER	$ 68,616	$ 100,236	$ 0	$ 100,236	$ 123,462
TOTAL	$ 242,339	$ 292,182	$ 0	$ 292,182	$ 331,311

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Geothermal Energy

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 4,315	$ 5,300	$ 0	$ 5,300	$ 4,400
Los Alamos National Laboratory	1,250	1,400	0	1,400	1,400
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 5,565	$ 6,700	$ 0	$ 6,700	$ 5,800
CHICAGO OPERATIONS OFFICE					
Brookhaven National Lab	$ 0	$ 0	$ 0	$ 0	$ 0
GOLDEN FIELD OFFICE					
National Renewable Energy Lab	$ 680	$ 580	$ 0	$ 580	$ 680
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 2,400	$ 4,500	$ 0	$ 4,500	$ 2,300
OAKLAND OPERATIONS OFFICE					
Lawrence Berkeley Lab	$ 0	$ 0	$ 0	$ 0	$ 0
ALL OTHER	$ 14,364	$ 26,027	$ 0	$ 26,027	$ 28,747
TOTAL	$ 23,009	$ 37,807	$ 0	$ 37,807	$ 37,527

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Hydropower

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 500	$ 450	$ 0	$ 450	$ 750
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 300	$ 50	$ 0	$ 50	$ 50
ALL OTHER	$ 239	$ 4,346	$ 0	$ 4,346	$ 194
TOTAL	$ 1,039	$ 4,846	$ 0	$ 4,846	$ 994

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Hydrogen Research and Development

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 1,500	$ 1,500	$ 0	$ 1,500	$ 1,500
Los Alamos National Laboratory	350	350	0	350	350
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 1,850	$ 1,850	$ 0	$ 1,850	$ 1,850
CHICAGO OPERATIONS OFFICE					
Brookhaven National Lab	$ 0	$ 100	$ 0	$ 100	$ 0
GOLDEN FIELD OFFICE					
National Renewable Energy Lab	$ 3,303	$ 2,200	$ 0	$ 2,200	$ 1,900
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 400	$ 200	$ 0	$ 200	$ 200
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 950	$ 1,000	$ 0	$ 1,000	$ 500
ALL OTHER	$ 3,087	$ 4,266	$ 0	$ 4,266	$ 2,994
TOTAL	$ 9,590	$ 9,616	$ 0	$ 9,616	$ 7,444

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Electric Energy Systems

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 1,497	$ 900	$ 0	$ 900	$ 1,000
Los Alamos National Laboratory	4,171	3,900	0	3,900	3,500
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 5,668	$ 4,800	$ 0	$ 4,800	$ 4,500
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 4,613	$ 4,350	$ 0	$ 4,350	$ 4,000
Brookhaven National Lab	606	625	0	625	500
Subtotal, CHICAGO OPERATIONS OFFICE	$ 5,219	$ 4,975	$ 0	$ 4,975	$ 4,500
GOLDEN FIELD OFFICE					
National Renewable Energy Lab	$ 884	$ 750	$ 0	$ 750	$ 600
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 12,483	$ 13,100	$ 0	$ 13,100	$ 18,262
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 2,097	$ 950	$ 0	$ 950	$ 600
OAKLAND OPERATIONS OFFICE					
Lawrence Berkeley Lab	$ 200	$ 250	$ 0	$ 250	$ 250
ALL OTHER	$ 10,459	$ 13,719	$ 0	$ 13,719	$ 12,926
TOTAL	$ 37,010	$ 38,544	$ 0	$ 38,544	$ 41,638

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Energy Storage Systems

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 4,913	$ 5,832	$ 0	$ 5,832	$ 5,100
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 935	$ 0	$ 0	$ 0	$ 0
ALL OTHER	$ 1,374	$ 0	$ 0	$ 0	$ 906
TOTAL	$ 7,222	$ 5,832	$ 0	$ 5,832	$ 6,006

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Policy and Management - ESR&D

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALL OTHER	$ 3,763	$ 4,817	$ 0	$ 4,817	$ 4,817
TOTAL	$ 3,763	$ 4,817	$ 0	$ 4,817	$ 4,817

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Solar Energy

FY 1995 Appropriation	$ 288,514
- Adjustment -	+3,668
FY 1995 Adjusted	$ 292,182
- Transfer -	0
FY 1995 Comparable	$ 292,182

Solar Building Technology Research

- Space Conditioning and Water Heating - Buildings Sector	-34
- Capital Equipment - Capital Equipment	+81

Photovoltaic Systems

- Fundamental Research - Utility Sector - Eliminates crystal growth research which impacts advancement of crystalline silicon technologies. Eliminates university participation program and new ideas program limiting long-term advancements. Reduces characterization and measurement activities which impacts industry support	+214
- Advanced Materials and Devices - Utility Sector - Increases funding for Thin Film Partnership Program	+1,812
- Collector Research and Systems Development - Utility Sector - Reduces photovoltaic system field testing and module reliability research at NREL	-4,394
- Capital Equipment - Utility Sector - To complete the refurnishing of the solar energy research facility (SERF) at NREL with state-of-the-art laboratory equipment	+2,970

Solar Thermal Energy Systems

- Technology Development - Utility Sector - Reduce investment in developing long-lived optical materials for heliostats and hybrid receivers for dispatchable dish/Stirling systems	-121

SUMMARY OF CHANGES - Solar Energy (cont'd)

Solar Thermal Energy Systems (cont'd)

- Commercial Applications - Utility Sector - Evaluate the utilization of the Nevada Test Site as a solar enterprise zone. Proceed with Phase 2 design validation modules with a larger number of articles being produced	+2,289
- Capital Equipment - Utility Sector	-4
- Solar Detoxification - Industry Sector - Decrease water and soil detoxification efforts; increase air detoxification	-46
- Solar Industrial Processes - Industry Sector- Initiate R&D program focused on advanced manufacturing processes	+368
- Capital Equipment - Industry Sector	-1

Biofuels Energy Systems

- Thermochemical Conversion - Utility Sector - No significant programmatic impact	-206
- Systems Development - Utility Sector - Fund additional private sector consortia in the development and demonstration of dedicated feedstock/advanced gasifier commercial projects	+15,117
- Capital Equipment - Utility Sector	0
- Municipal Solid Waste Bioprocessing - Industry Sector - Support CCAP initiative for methane recovery from landfills	+1,555
- Capital Equipment - Industry Sector	0
- Advanced Turbine System for Biogas - Industry Sector - Biomass Fuels - Support Biomass Energy Initiative by modifying industrial gas turbines to use biomass-derived fuels	+1,984
- Feedstock Development - Transportation Sector -Continue research to develop economically viable model energy crops for multiple energy related uses, including biofuels, biomass power, and chemicals that could be produced in an integrated bioenergy plant	+1,889
- Biochemical Conversion - Transportation Sector - Working in partnership with companies and company consortia, conduct scientific research and technology development to improve efficiency and costs of ethanol production, and conduct cost-shared demonstration-scale projects that will lead to larger scale deployment of ethanol from energy crop systems	+834
- Thermochemical Conversion - Transportation Sector - Pursue partnerships and collaborative agreements with industry to jointly develop and scale up the most promising thermochemical process routes including methanol, reformulated gasoline components, and biodiesel	+1,258

SUMMARY OF CHANGES - Solar Energy (cont'd)

Biofuels Energy Systems (cont'd)

- Capital Equipment - Transportation Sector -Purchase additional equipment to modify the process development unit and laboratory equipment at the Alternative Fuels User Facility . . . . . -825

- Regional Biomass Program - Technical & Financial Assistance . . . . . -869

Wind Energy Systems

- Applied Research - Utility Sector - Increase Wind Characterization research and University participation . . . +1,900

- Utility and Industry Programs - Utility Sector - Decrease represents completion of near-term advanced wind turbine field testing . . . . . +292

- Capital Equipment - Utility Sector - Increase equipment support for National Wind Technology Center . . . . . +489

Ocean Energy Systems

- Thermal Conversion - Utility Sector 0

Solar International Programs

- CORECT,Americas 21st Century,EPACT 1203 LDC Training,Sustainable Dev. including Joint Implementation and Country Studies - As agreed upon by the EE International Team, of the total additional $9.5M for the International Initiative, $8.8M is to be used for programs funded under Energy and Water, in the Solar International program area. Of this, $1.5M is allocated to raise the Americas 21 program to $5M, $0.5M is to implement planned training programs, $4.7M is for a new initiative, implementing the CORECT strategy in Asia/Pacific, African and Eastern Europe/NIS markets, and the remaining $2M is for implementation of the Country Studies. An additional $7.5M is requested for Sustainable Development Demonstrations in support of the U.S. Initiative on Joint Implementation Program . . . . . +20,067

Solar Technology Transfer

- STIP/CAREIRS and Tech Transfer Ventures - TFA - Includes decrease of $3M due to shifting request for Indian Energy Assistance Program from Interior, along with decrease of close to $1M in Information and Education Outreach programs, pending outcome of EE-wide coordination effort, and slight decrease in Commercialization Ventures . . . . . -4,648

Solar Program Support

- Evaluation and Planning - Utility Sector - Increase for Climate Challenge activities and phased-decrease for Renewable Energy Production Incentive . . . . . -4,854

SUMMARY OF CHANGES - Solar Energy (cont'd)

Resource Assessment

- Resource Assessment - Utility Sector - Core program activities and funding for the Renewable Energy Data Center will be reduced, activities to continue development of the cooperative measurement network and increase comprehensive renewable energy data base	+710
- Capital Equipment - Utility Sector	+5

National Renewable Energy Laboratory

- Facility Construction - Utility Sector	-2,750
- General Plant Projects - Utility Sector	-1,075
- General Purpose Equipment - Utility Sector	-1,168
- Facility Construction - Industry Sector	+5,500
- General Plant Projects - Industry Sector - for FTLB Renovation and Expansion	-330
- General Purpose Equipment - Industry Sector	0
- General Plant Projects - Buildings Sector	0
- General Purpose Equipment - Buildings Sector	0
- General Plant Projects - Transportation Sector	-140
- General Purpose Equipment - Transportation Sector	0
- General Plant Projects - Technical & Financial Assistance	0
- General Purpose Equipment - Technical & Financial Assistance	0

Program Direction

- Utility Sector - Program Direction - Utility Sector	+1,260
- Golden Field Office - Golden Field Office	0
Subtotal, Solar Energy	$ 331,311
Adjustment	$ -4,888
FY 1996 Congressional Budget Request	$ 326,423

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Solar Building Technology Research

INTRODUCTION

The mission of the Solar Buildings Technology Research program is to provide for the cost-effective use of solar energy for space conditioning, hot water, and electric generation in support of OBT's mission to increase the overall energy efficiency of the building stock. If incorporated at the time of construction, existing solar energy technologies can economically meet up to one half of the annual heating, cooling, and lighting energy requirements of residential and light commercial buildings in many parts of the country. By displacing conventional fuels with solar energy, substantial reductions in building energy operating costs can be realized, as well as associated environmental benefits. It is estimated that the solar systems in place today -- primarily for pool heating and domestic hot water -- are saving the nation on the order of .02-.03 Quads of energy annually, and provide the equivalent of approximately 2600 MW of power -- or 2.5 power plants worth. The manufacture, distribution, sales, and installation of these systems has created an estimated 25,000 job-years of employment since the mid-1970's. While this represents great progress, further advances are required to enable solar technologies to move beyond niche markets and realize their potential for widespread market penetration.

The program goal is to increase the utilization of solar technologies through a partnership with industry and the end-user. The strategy involves a balance of near-term activities focusing on improved quality and market development for state-of-the art systems, and longer term research activities to improve the cost effectiveness of systems by a factor of two for the broader markets. The program focus is on active solar space and water heating technologies and building-integrated (BIPV) technologies. To spur near-term market success, the active solar program emphasis is on developing partnerships for large solar domestic hot water (SDHW) system markets, with specific activities in the areas of ratings and certification, reliability, and market conditioning. These activities are aimed at getting reliable, standardized systems into the field with special emphasis on utility programs, since they offer potential for cost reduction. Longer term R&D on solar water heating and space conditioning is also supported through an advanced systems effort. The BIPV effort is designed to demonstrate commercial and residential BIPV system designs that maximize electrical energy and peak-demand displacement, minimize balance of system costs, and increase system performance and reliability. This is accomplished through a focused program involving technology and market assessments, advanced system designs, demonstration projects, and industry collaborations.

Through these collective activities, it is anticipated that:

- o the number of SDHW systems could double (reach approximately 2 million) within the next 5-10 years.
- o annual primary energy displaced could reach .04 - .06 Quads by the year 2000 -- or the equivalent of up to 5.0 power plants
- o annual CO_2 emissions could be reduced by an additional 1.8 - 2.3 million tons annually over the next 5 years
- o an additional 13,000-25,000 job-years (cumulative) of employment could be generated over the next 5 years
- o export/domestic total market sales of $2.5B/ $5.0B respectively within the next 5-10 years.

Active Solar Space Conditioning and Water Heating:

- o Ratings and Certification: The goal of this activity is to provide the technical development of analytical testing methodologies to

support industry efforts to establish a voluntary rating and ertification procedures for implementation by the Solar Rating and Certification Corporation (SRCC). The broad adoption of these procedures will provide the basis for end-user quality assurance for the design and installation of standardized and reliable solar equipment with a 15-20 year service life. The program has developed rating and certification procedures (SRCC OG-300) under the auspices of SRCC which is responsible for the implementation of this standard to provide consumer assurances regarding the expected overall performance and quality of installed solar equipment. OG300 has been adopted by the Sacramento Municipal Utility District (SMUD), and has noticeably improved the reliability of SMUD-supported SDHW installations.

- o Reliability/Maintainability Research: Research in this area is targeted at the identification and resolution of technical issues affecting the reliability and maintainability of systems in order to achieve 20 year service lives with sustained levels of performance. This is an industry priority area, since one of the keys to long-term market success is high reliability and sustained energy savings over an extended period to offset the initial capital cost of solar equipment.

- o Technology Deployment: This effort is designed to provide technical support to industry driven efforts to address technical barriers to developing large-scale markets for solar equipment and systems, through a targeted program of technical assistance and information development. Efforts will focus on activities to support the specific needs identified by utilities and the solar industry under the framework of the Utility Solar Water (USH2O) initiative. More than 70 utilities have been collaborating in the USH2O Initiative, and 6-12 of those utilities have organized a Utility Users Group (UUG) to coordinate the immediate priorities and needs for those utilities about to implement an SDHW/DSM initiative similar to SMUD's.

- o Advanced Concepts Research: The emphasis is on advanced material, component, system design, and manufacturing concepts that can meet requisite economic/performance criteria for commercial success -- a 5 year payback against conventional electric resistance water or space conditioning technologies. The advanced concepts RFP issued in FY 1995 has been structured to promote cost-sharing and partnerships to maximize the development of a marketable product, and it is expected to yield several concepts with the potential for meeting this goal. In addition, research on advanced SDHW systems that incorporate lower cost/higher performance materials and standardized components will be sponsored. This will be done in concert with the potential system manufacturers, augmented by in-house R&D. Previous work has indicated substantial potential for improved heat exchanger/tank designs, including the use of alternative materials.

Building-Integrated Photovoltaics (BIPV):

- o Advanced Design Development: The FY 1996 efforts build on earlier activities that included the identification of the market opportunities and barriers, and the establishment of a framework for collaboration with industry. A primary focus includes a design competition and technical evaluation of privately funded demonstration projects to develop advanced solutions for the cost-effective integration of photovoltaics in residential and commercial buildings by the year 2000. In close coordination with the PV-Bonus program, the design competition will result in a portfolio of designs that can be used by builders/designers interested in demonstrating the viability of BIPV systems to compete with conventional power sources in building applications. Industry collaboration also includes cooperative efforts with the Heating, Ventilating, and Air Conditioning (HVAC) industry, photovoltaic system/product manufacturers, and the construction industry tol focus on promising designs that can readily be incorporated into conventional construction. Since high installed costs are the principal hurdle to the wider use of BIPV systems, the emphasis will be on applications and concepts for which architectural photovoltaic products (e.g, PV windows, PV roof membranes, etc.) replace expensive building components.

PERFORMANCE INDICATORS AND MEASURES

The success of the FY 1996 program will be determined, in part by the achievement of the following:

- o Enlisting 1 to 2 more utilities under USH2O to adopt the SRCC OG-300 guidelines, and launch solar domestic hot water (SDHW) programs similar to the Sacramento Municipal Utility District's (SMUD) solar initiative of 1000 systems/year.

- o Deployment of SDHW systems as a direct result of technical support to industry-driven market conditioning efforts in partnership with Federal, state, and local initiatives to double system sales annually for the next 5-10 years.

I. Solar Building Technology Research (Cont'd)

- o Development/deployment of solar installer certification training programs by industry.
- o Installation of advanced space conditioning systems with potential to meet 5 year payback goal (e.g., a 10%-20% improvement in performance along with a 30%-60% reduction in costs compared to current solar systems).
- o BIPV projects implemented that demonstrate benefits of integration in reducing costs, improving aesthetics compared to conventional systems.
- o Preliminary engineering development of a fully integrated balance of system (IBOS). IBOS represents a precursor to the making of a standard solar appliance using conventional certification, warranty, distribution, installation, and servicing practices.

II. A. Summary Table: Solar Building Technology Research

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Buildings Sector - Solar Technologies				
Space Conditioning and Water Heating.....	$ 4,610	$ 4,505	$ 4,471	$ -34
Capital Equipment.....	194	105	186	81
Subtotal, Buildings Sector - Solar Technologies	$ 4,804	$ 4,610	$ 4,657	$ 47
Total, Solar Building Technology Research	$ 4,804	$ 4,610	$ 4,657	$ 47

II. B. Laboratory and Facility Funding Table: Solar Building Technology Research

National Renewable Energy Lab	$ 2,000	$ 2,000	$ 2,000	$ 0
All Other	2,804	2,610	2,657	47
Total, Solar Building Technology Research	$ 4,804	$ 4,610	$ 4,657	$ 47

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solar Building Technology Research			
Buildings Sector - Solar Technologies			
Space Conditioning and Water Heating	TECHNOLOGY DEPLOYMENT ACTIVITIES: Technology Deployment: Address technical barriers for industry-driven technology deployment activities to double market penetration of solar equipment to 2 million buildings by the year 2000 through cost-shared collaborative activities with utilities, states and local advocacy initiatives and industry-driven export market development. Provide technical support for expanding regional markets to accelerate the widespread utilization of solar. Continue technical support of ongoing utility/industry Solar Domestic Hot Water/Demand Side Management (SDHW/DSM) collaborative (USH2O) and Sacramento Municipal Utility District's (SMUD) Solar Initiative. Develop additional utility/industry/government cost-shared collaboratives to accelerate the broad based utilization of SDHW systems in utility DSM programs as part of the Utility User Group (UUG) Initiative. Expand use of SDHW with state/local energy and environmental program initiatives; EPA programs and technology protocols resulting from the Clean Air Act. ($860)	Technology Deployment: Continue technical support for expanding regional markets to accelerate the widespread utilization of solar. Support utility driven activities including the Utility/Industry Initiative (USH2O), the Sacramento Municipal Utility District's (SMUD) Solar Initiative, the Utilities User Group (UUG) Initiative, and the utility industry group (UIG) Initiative, and the Utility Industry Group (UIG) Initiative. Evaluate SDHW effectiveness in utility DSM program measures. Initiate collaboratives and technical assistance to accelerate the use of solar in Federal buildings in coordination with the Federal Energy Management Program (FEMP) Renewable Energy Initiative. Provide similar assistance to the Solar Weatherization Assistance Program (SWAP) and for SDHW efforts to be undertaken by the California Air Quality Management District's (CAL-AQMD) mandated/ voluntary initiatives. ($1,450)	Technology Deployment: Continue technical support for expanding regional markets to accelerate the widespread utilization of solar. Continue to provide technical support to utility solar technology initiatives including the SMUD Solar Initiative, USH2O Initiative, the Utilities User's Group (UUG) Initiative, and the Utility Industry Group (UIG) Initiative. In coordination with FEMP activities, establish and facilitate development of collaborative solar projects with utilities and the Federal sector including DOD, EPA, DOI, and GSA. Continue to work with SWAP initiatives and CAL-AQMD mandated/voluntary initiatives. ($1,420)

III. Solar Building Technology Research (Cont'd):
Buildings Sector - Solar Technologies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Space Conditioning and Water Heating (Cont'd)	QUALITY ASSURANCE DEVELOPMENT: In collaboration with industry and utilities, develop and deploy quality assurance measures for 15-year extended service life of solar equipment and installations to accelerate market acceptance and utilization. Continue development and implementation of SRCC rating and certification procedures for SDHW (OG-300); continue implementation of OG-400 for swimming pool heating systems. Complete resolution of additional development issues resulting from the implementation of SRCC OG-300 rating and certification procedures for SDHW systems. ($1,325)	Quality Assurance Development: Continue to provide techncial support to the Solar Rating and Certification Corporation (SRCC) equipment certification (OG 300/400) and installer/servicing license procedures to address quality assurance issues. Assist industry and utilities in implementing and evaluating the effectiveness SRCC OG- 300/400 procedures in response to expanded regional applications resulting from the USH2O Initiative, the Utility User Group (UUG), SWAP Initiatives, California AQMD 1995 mandates for SDHW use in residential buildings, and FEMP projects in Federal buildings. ($775)	Quality Assurance Development: Continue technical support for the development and implementation of OG-300/400 equipment certification and installer/servicing licensing procedures. Working in collaboration with the solar industry and expanded market opportunities, accelerate the establishment of OG-300/400 certification and installer/servicing licensing as Nationally recognized procedures. Continue to monitor and evaluate the effectiveness of ratings/certification procedures in providing quality assurance of installed solar products. ($774)
	Reliability/Maintainability: In collaboration with industry, utilities, and state/local field assessments, evaluate the effectiveness of SRCC OG-300/400 system and installer certification procedures to provide quality assurance of solar equipment and installations and to identify/resolve residual issues. Conduct research to resolve priority issues of freezing, overheating, and scaling in SRCC OG-300 certification procedures. In partnership with industry, identify prototype design demonstrations to validate the ASHRAE design, installation, operation/ maintenance manuals for large active solar systems installed in commercial buildings. ($660)	Reliability/Maintainability: Complete research on priority issues in SRCC OG-300 certification process. Initiate monitoring the long-term operational performance of 100 SDHW systems over a 5-year period. Identify and address remaining design and installation issues affecting the service life and reliability of OG-300/400 certified systems. Provide technical support to industry pilot demonstration to validate the ASHRAE design, installation, operation & maintenance manuals for large active solar systems installed in Federal sector buildings and private commercial buildings. Validate western regional design guide in cost-shared prototype installations; identify need to develop regional design guides nationwide. ($375)	Reliability/Maintainability: Continue research to resolve residual issues identified in evaluation of SRCC OG-300/400 certification processes. Continue monitoring and evaluation of long-term operational performance of 100 SDHW systems over a 5-year period. Continue to address remaining design and installation issues affecting the service life and reliability of OG-300/400 certified systems. Continue validation assessment of ASHRAE design, installation, operation & maintenance manuals for commercial scale active solar systems and initiate appropriate manual and PC-based design software revisions. ($375)

III. Solar Building Technology Research (Cont'd):
Buildings Sector - Solar Technologies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Space Conditioning and Water Heating (Cont'd)	Advanced Concepts Research: Develop cost-shared collaboratives which foster expanded end-use market incentives to accelerate industry innovative technology developments for next-generation solar equipment and installations with 1/2 the cost/benefit ratio by the year 2000. Develop R&D plan and initiate research and development for advanced materials, components, system concepts, and manufacturing processes to address critical needs of industry for the next generation of solar systems with improved cost-competitiveness. Initiate basic materials research program to support industry's priority issues in solar collector designs, and improved manufacturing processes for increased cost-competitiveness and service life. ($1,357)	Advanced Concepts Research: Initiate CRADA/RFP with industry for cost-shared proprietary development and commercialization of next generation solar collectors and system prototypes with significantly increased cost-competitiveness and service life using advanced materials and manufacturing processes for test and evaluation. Continue basic materials research program to support industry's priority issues in solar collector designs and improved manufacturing processes for increased cost-competitiveness and service life. Initiate optimization research and initiate development/validation on several advanced system and control concepts. In collaboration with an industry partner, initiate preliminary engineering development of a fully-certified Integrated Balance of System/Tank (IBOST) module. ($1,405)	Advanced Concepts Research: Complete preliminary engineering development phase and initiate prototype development phase of RFP solicitation with industry for cost-shared proprietary development and commercialization of next generation solar equipment prototypes using advanced materials, components, and manufacturing processes. Continue basic materials research to address priority issues in solar collector designs. Initiate industry cost-shared partnerships to incorporate materials developments and manufacturing processes in equipment design and production. Establish cost-shared industry collaborative to develop and manufacture fully-certified integrated Balance Of System/Tank (IBOST) module. Continue development and validation of several advanced system and control concepts. ($1,402)
	PV Buildings Research: Assist in the technical development, deployment, and architectural acceptance of building-integrated photovoltaics as dual-use equipment for both distributed power generation and building-integrated structural components. Continue cost-shared analysis and development of PV building product concepts for prototype testing and evaluation, including technical support to the PV:Bonus program. Conduct market research evaluation of specific PV building concepts to determine projected cost effectiveness and market penetration potential. Develop plan for industry cost-shared development and validation of advanced building integrated photovoltaic (BIPV) concepts. ($408)	PV Buildings Research: Continue cost-shared analysis and development of PV building product concepts for prototype testing and evaluation, including technical support to the PV:Bonus program. Initiative RFP solicitation for industry cost-shared development of conceptual designs and building applications for building integrated photovoltaics. Develop collaboratives for cost-shared design/build projects to obtain information on cost, performance, reliability, durability, and consumer satisfaction. ($500)	PV Buildings Research: Continue research on the technical development and integration of PV products in buildings. In coordination with the PV Bonus, complete conceptual design phase, identify building applications/projects, and initiate industry cost-shared prototype development of building integrated photovoltaics (BIPV) projects. Evaluate cost-shared design/build projects for lessons-learned information on cost, performance, reliability, durability, and consumer satisfaction. ($500)

III. Solar Building Technology Research (Cont'd):
Buildings Sector - Solar Technologies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Space Conditioning and Water Heating (Cont'd)	$4,610	$4,505	$4,471
Capital Equipment	Construction and instrumentation of reconfigurable test facility for advanced solar system concepts. ($194)	Testing hardware and computer based monitoring equipment for rating and certification research; construction and instrumentation of reliability test stant; and reconfigurable test facility for solar water heating. ($105)	Expansion of reconfigurable test facility for additional advanced system components; instrumentation and data acqusition of building-integrated photovoltaic projects. ($186)
	$194	$105	$186
Subtotal, Buildings Sector - Solar Technologies	$4,804	$4,610	$4,657
Solar Building Technology Research	$4,804	$4,610	$4,657

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Photovoltaic Systems

Photovoltaic Systems program elements are integral to achieving Energy Policy Act goals of increasing the use of environmentally benign, economically secure energy supplies. Photovoltaic technology development, both in materials and manufacturing processes, directly addresses the Office of Science and Technology Initiatives in critical materials and manufacturing technologies, as well as the National Technology Initiative.

The FY 1996 request presents a balanced effort in research, manufacturing engineering, and market development. The research activities will continue across several photovoltaic material systems, building on prior-year results. At this time, no single material system has a commanding lead over the others. To meet the near-term goals of over one GW of cumulative installations by 2000, key industry silicon and polycrystalline photovoltaic materials manufacturers will focus on advanced manufacturing processes and simplified designs to lower costs. Thin-film manufacturers will emphasize conversion efficiency improvements, multiple-junction deposition techniques, improved materials handling, and encapsulation. Consumer acceptance and market conditioning activities will continue to validate PV technologies in highly leveraged projects with industry and utility partners.

Fundamental research activities will continue to resolve issues concerned with advanced (post 2000) competitive energy technologies through measurements and performance evaluation activities at universities and Federal laboratories. Advanced materials and devices work will continue cost-shared activities with industry to improve device efficiency and stability, particularly for large-area thin-film deposition systems. These activities are core program efforts to develop the advanced technologies, in close cooperation with U.S. industry, that are essential to maintaining U.S. industry's competitiveness in the next 5 to 10 years (maintaining a pipeline of advanced technology for future commercial products.) High-efficiency research activities will be continued in order to investigate multi-bandgap, multi-junction monolithic devices that show promise for achieving concentrator cell conversion efficiencies above 35 percent. These activities are supporting near-term implementation of concentrator systems and longer-term high-efficiency flat-plate systems. The manufacturing process technology effort, a major element of the program, will continue cost-shared work with industry to reduce module manufacturing costs, improve module performance, and stimulate near-term investment in new production lines. Module and system reliability research will continue to support environmental testing of photovoltaic modules and systems to improve operational lifetime in the field. In cooperation with the Office of Technical and Financial Assistance (OTFA), effort will be directed toward the development and technical validation of specific cost-shared, high-value applications.

The Photovoltaic Manufacturing Technology Project (PVMaT) is continuing to cooperate with industry in advancing manufacturing processes and reducing manufacturing costs to extend U.S. industry's world leadership role in commercially developed modules and systems. Four procurement phases have been successfully implemented -- PVMat Phases 2A and 2B on process-specific manufacturing R&D, PVMat Phase 3A on generic manufacturing R&D, and PVMat Phase 4A on product-driven manufacturing R&D. PVMat Phase 4A is expected to be the last procurement in this project (requiring funding through FY 1997 and being largely completed by the end of FY 1998). The project's activities are expected to be completed by early FY 1999. These contracts represent new technology additions in the PVMaT Project. The PVMaT project is expected to reduce the cost of photovoltaically-produced electricity by more than a factor of two to $0.12/kWh in the near-term and to have more than doubled U.S. industry's manufacturing capacity by 1997 over that projected without this project.

Market development efforts have been increased through the PV:BONUS (Building Opportunities in the U.S. for PV) project and UPVG (Utilities PV Group) project. The PV:BONUS project has five contractors performing cost-shared activities associated with the use of photovoltaics with buildings, and the UPVG project has utility teams operating in over 30 states to stimulate the use of photovoltaics in utility applications. In 1994, the Utilities PV Group identified 70 utilities that were willing to collectively cost-share over 50 projects totaling 8.5 MW. These market development efforts will be continued in FY 1996, focusing on projects designed to establish international joint ventures to stimulate international markets for U.S. photovoltaic manufacturers. These activities will be heavily cost-shared.

Market mobilization will focus on developing large market aggregations of cost-effective and near cost-effective utility and commercial applications of PV systems, and to stimulate user-selected and competitively-awarded commercial and utility-scale demonstrations of PV applications. DOE will continue to work cooperatively planning and partially funding partnerships with users, suppliers, and state and local government entities to aggregate PV markets and stimulate large-scale, hands-on demonstrations, overcome economic barriers, and increase user-operating experience. In FY 1995, ten to 15 new projects will be identified and initiated totaling several megawatts of total installed capacity additions. The second-year funding by DOE under the Climate Change Action Plan will continue to be matched by user and industrial cost-sharing of two to three times and is part of a larger renewable energies market development effort involving wind, biomass, and geothermal technologies.

With the exception of fundamental research activities and the research conducted at Federal laboratories, the program leverages its efforts through extensive cost-sharing with the U.S. photovoltaic industry. For FY 1996, industry's share is estimated to be about $43 million. Strong cost-sharing clauses in the manufacturing initiative require real cost sharing (up to 50 percent of allowable contract costs). The market stimulation activities also require at least 50% cost sharing. In addition, the program has instituted contractual requirements to insure U.S. production of this technology.

Performance measures include: improved system efficiencies and reliability, year-by-year reduction of installed system costs, increases in U.S. industry manufacturing capacity, reductions in cost of manufactured products, and growth in module sales.

National Photovoltaic Program

Performance Metrics

-- Improved cell, module and system efficiencies. Increase efficiencies across all three photovoltaic technologies, thin-films, single crystal silicon and concentrator cells. Laboratory and industrial researchers continue to establish new records yearly.

-- Improved reliability. Warranties on PV modules have doubled in the past three years from 5 years to 10 years. Increase reliability of PV products extending lifetimes to greater than 20 years.

-- Reduce installed system costs. The installed system cost for large system buys (example: Sacramento Municipal Utility District) decreased about 15% between 1993 and 1994 to under $7.00 per installed watt.

-- Increase U.S. PV industry manufacturing capacity. In 1990, capacity was about 20 megawatts with sales of about 15 megawatts. Over the past two years, industry has expanded and improved their manufacturing facilities while others have announced new production plants for the 1995-6 period. The U.S. capacity in 1994 is estimated currently at more additional megawatts capacity addition by 1996-7.

-- Increase growth in photovoltaic module sales. Sales in 1993 were up by about 24% from 1992 (from 18.1 megawatts to 22.4 megawatts). Estimates in 1994 show growth over 30% (30 megawatts or more).

II. A. Summary Table: Photovoltaic Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Fundamental Research	$ 7,946	$ 7,527	$ 7,741	$ 214
Advanced Materials and Devices	23,000	23,000	24,812	1,812
Collector Research and Systems Development	40,345	56,000	51,606	-4,394
Capital Equipment	3,590	1,000	3,970	2,970
Subtotal, Utility Sector	$ 74,881	$ 87,527	$ 88,129	$ 602
Total, Photovoltaic Systems	$ 74,881	$ 87,527	$ 88,129	$ 602

II. B. Laboratory and Facility Funding Table: Photovoltaic Systems

Brookhaven National Lab	$ 400	$ 400	$ 400	$ 0
National Renewable Energy Lab	50,000	50,000	50,000	0
Sandia National Laboratories	11,000	11,000	11,000	0
All Other	13,481	26,127	26,729	602
Total, Photovoltaic Systems	$ 74,881	$ 87,527	$ 88,129	$ 602

530

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Photovoltaic Systems			
Utility Sector			
Fundamental Research	Continue the major activities at NREL on developing: (1) new materials and device measurements for both surface and bulk properties, (2) solid-state theory, and (3) crystal growth techniques that will enable improved device performance. Continue the university program to develop interdisciplinary groups with the necessary photovoltaic expertise and the development of potential cadre for the photovoltaic industry. Initiate new round of new ideas project. Work continues in assisting U.S. industry and research institutions in evaluating and modifying processes and procedures related to environment, health, and safety. (NREL, BNL) ($6,946)	Continue the major activities at NREL on developing: (1) new materials and device measurements for both surface and bulk properties, (2) solid-state theory, and (3) crystal growth techniques that will improve device performance. Restructure the University Program to create photovoltaic expertise in critical skills areas and develop a cadre of photovoltaic specialists for industry. Continue the Environment, Health and Safety project at BNL concerning the improvement of processes and procedures in industry and research laboratories for these issues. (NREL, BNL) ($6,527)	Reduce the core research activities at NREL on developing new materials and device measurements for both surface and bulk properties, solid-state theory, and crystal growth techniques. Work with industry to emphasize fundamental research activities with market/product orientation. Continue the University Program to create photovoltaic expertise in critical skills areas and develop a cadre of photovoltaic specialists for industry. Cooperate with the Basic Energy Sciences (BES) part of the Office of Energy Research (ER). Continue the Environment, Health and Safety project at BNL concerning the improvement of processes and procedures in industry and research laboratories for these issues. (NREL, BNL) ($7,741)
	Continue complementary work with the Office of Energy Research (OER) and industry to integrate the development of crystal growth and thin-film deposition techniques for producing higher-quality cells. Industry and university laboratories will participate in the R&D activities to facilitate their adoption of the newly developed techniques and materials. (NREL) ($1,000)	Continue cooperating in photovoltaic-related research projects with the Basic Energy Sciences (BES) part of the Office of Energy Research (ER). Additional opportunities for mutual support of research needs in photovoltaic materials and devices will be evaluated and initiated, when possible. (NREL) ($1,000)	No Activities. ($0)
	$7,946	$7,527	$7,741

III. Photovoltaic Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Materials and Devices	Work on advanced thin-film materials shifts to emphasize the optimization of multijunction thin-film technologies (both amorphous silicon and polycrystalline thin films), including window layers and back contacts. Through improved bandgap engineering and related deposition techniques, thin-film devices greater than 15 percent efficiency will be realized. Develop improved encapsulation materials and processes. (NREL) ($14,800)	Optimization work on multijunction amorphous silicon thin-film devices and polycrystalline thin-film materials and devices will be increased. The latter materials include ternary and quaternary compounds. Develop new high bandgap window materials. These studies should lead to devices with conversion efficiencies above 15%. Continue the development of more stable encapsulation materials and processes. (NREL) ($16,000)	Accelerate the cooperative efforts with the PV industry to develop commercially-viable, thin-film material, cell, and module technology for cadmium telluride, copper indium diselenide, amorphous silicon, and thin-film polycrystalline silicon. FY 1996 funds will be used to accelerate and integrate the thin-film cost-shared industry partnership program based on a DOE/NREL procurement issued in FY 1995. About twenty contracts are expected to be initiated. Continue work to improve deposition processes and performance for near-commercial cells and modules including multijunction amorphous silicon thin-film devices and polycrystalline thin-film materials and devices, including ternary and quaternary compounds. Increase efforts to advance large-area cell and module processing technology and reactor equipment to improve products and reduce fabrication costs. Develop new high bandgap window materials. These studies should lead to devices with conversion efficiencies above 15%. Continue the development of more stable encapsulation materials and processes. (NREL) ($17,812)
	Develop and test reactors and manufacturing processes to produce large areas of high-efficiency concentrator devices at a lower cost. Continue device R&D to extend the laboratory efficiencies of concentrator devices to greater than 35 percent conversion efficiency based on new combinations of materials in multijunction devices. Continue to improve fabrication processes and crystalline silicon device structures to increase efficiency and reduce costs	Improve processes for producing large area (>1 cm2) high-efficiency multijunction concentrator devices with efficiencies greater than 35%. Continue the studies with silicon devices that have shown significant improvement in the recent past, especially for concentrator use. Work with industry to transfer these new developments rapidly so that lower costs and resulting prices can be passed on to end-users. (NREL, SNL) ($7,000)	Improve processes and transfer technology for producing large area (>1 cm2) high-efficiency multijunction concentrator devices with efficiencies greater than 35%. Continue the studies with silicon devices that have shown significant improvement recently, especially for flat-plate modules. Cooperate closely with industry to transfer these new developments rapidly so that lower costs and resulting prices can be passed on in commercial products. (NREL, SNL) ($7,000)

III. Photovoltaic Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Materials and Devices (Cont'd)	for both flat-plate modules and concentrator subsystems. The goal is to help industry boost efficiencies and reduce costs with minimum changes in basic production processes. (NREL, SNL) ($8,200)		
	$23,000	$23,000	$24,812
Collector Research and Systems Development	Complete the first round of company-specific, three-year contracts, and fund the second year of the second round of company-specific contracts enhancing them with current state of the art approaches. The objectives of PVMaT initiative, are to advance PV module manufacturing processes, reduce the manufacturing costs of PV modules, improve module performance and reliability, and generally lay the groundwork for substantially scaling up U.S.-based production facilities. These objectives are critical to enhancing U.S. industry's competitiveness. Work on the first generic contracts continues and planning for a second generic procurement is initiated. Investigate the need for a third company-specific procurement. (EPACT Section 2111) (NREL, SNL) ($18,000)	The Photovoltaic Manufacturing Technology (PVMaT) Project will continue in FY 1995 at approximately the same funding level as FY 1994. Three-year contracts initiated in FY 1992 under the Phase 2A process-specific manufacturing R&D will be completing their work (under FY 1994 third-year funding). Funding in FY 1995 will be provided for third-year funding of two generic research contracts initiated in FY 1993 on encapsulation materials improvement and automation of module manufacturing; for the second-year funding of up to five contracts for process-specific manufacturing R&D under the FY 1994 PVMaT Phase 2B procurement; for up to four new contracts for generic research under a Phase 3B procurement; and up to six new contracts on process- specific manufacturing R&D on balance-of-systems components under a Phase 2C procurement. (EPACT Section 2111) (NREL, SNL) ($19,000)	The Photovoltaic Manufacturing Technology (PVMaT) Project will continue in FY 1996 at approximately the same funding level as FY 1995. The two three-year contracts initiated in FY 1993 under the PVMat Phase 3A generic manufacturing R&D will be completed. Funding in FY 1996 will be provided for third-year funding of four process-specific, three-year contracts initiated under the FY 1994 PVMat Phase 2B procurement; for the second-year funding of up to ten contracts for product-driven manufacturing R&D initiated under the FY 1995 PVMaT Phase 4A1 procurement; for up to four new contracts for process-specific research under a Phase 4A2 procurement. The contracts under the Phase 4A1 procurement will be directed in a large measure to manufacturing R&D on balance-of-systems components. (EPACT Section 2111) (NREL, SNL) ($17,606)
	Complete the final concentrator initiative contracts. (SNL) ($2,000)	No Activities. ($0)	No Activities. ($0)

III. Photovoltaic Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Collector Research and Systems Development (Cont'd)	Fund continuation of three activities. (1) Continue Phase II of PVUSA to incorporate new technologies into utility-type systems validation. This will include the USAPV project initiated in FY 1993. (2) Continue the research on encapsulation for a low-cost, 30-year module. (3) Continue the PV buildings and Tucson Project activities with teaming of utilities and end-users. This Public-Private Power joint venture initiative begins several high-value applications with individual utilities as identified by the Tucson Project in FY 1993. The FY 1994 program includes an extensive education campaign to inform utilities of the value of modular photovoltaics; investigation and demonstration effort that identifies new, high-value uses, particularly on utility grid systems; encouragement efforts to get states to work with utilities to rate base first-of-a-kind small-scale projects; and federal participation to assist utility decisions using products from existing production lines as a precursor to larger interest and sustainable commitments. These efforts will be consolidated under a comprehensive cost-shared effort called PV-COMPACT. (Photovoltaic Collaborative Market Project to Accelerate Commercial Technology) Systems research continues to emphasize development of reliable systems and system components, including power conditioning components, and continues to monitor and evaluate operating field systems to identify areas needing further improvement. (NREL, SNL, ALO, GO) ($18,345)	Continue funding of PVUSA to obtain operational, maintenance, performance, and reliability data on the emerging technology systems and the utility-scale systems (grid-tied) constructed over the past 5 years in association with more than 10 utilities. Continue the research directed to improving the performance and lifetime of ethylene polyvinyl (EVA) encapsulation material, which is widely used by module manufacturers. Additives to and alternatives to EVA will be made and evaluated. The Phase 2 of the PV:BONUS projects will be continued to evaluate the residential and commercial buildings applications of photovoltaic technology. The PV-COMPACT program will be continued by the participating utilities and utility associations (3) to identify cost-effective and near-term cost-effective applications of broad interest to the members in an effort to aggregate a substantial utility market and to initiate broad module and installed system procurements. The concentrator studies and balance of systems (B-O-S) studies will be continued at the FY 1994 level. Market stimulation projects, such as PV:BONUS and UPVG, will be funded to exploit the growing interest of end-users to incorporate PV into near and mid-term applications. These projects will require heavy cost-sharing by the contractors. (NREL, SNL, ALO, GO) ($17,000)	Reduce systems evaluation and deployment activity. The phase 2 of the PV:BONUS projects will be continued to evaluate the residential and commercial buildings applications of photovoltaic technology. The concentrator studies and balance of systems (B-O-S) studies will be continued at a lower level. Market stimulation projects, such as PV:BONUS and PVUSA will be funded to exploit the growing interest of end-users to incorporate PV into near- and mid-term applications. These projects will require heavy cost-sharing by the contractors. (NREL, SNL, ALO, GO) ($14,000)

III. Photovoltaic Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Collector Research and Systems Development (Cont'd)	No Activities. ($0)	CLIMATE CHANGE ACTION PLAN: (MARKET MOBILIZATION:) FY 1995 funding will be used to (1) develop large market aggregations of presently cost-effective and near-term, cost-effective photovoltaic applications among utility and commercial users and (2) undertake competitively-selected commercial- and utility-scale demonstrations of photovoltaic technology and applications that are cost shared by participants on at least a 2 (proposers) to 1 (DOE) basis. Both of these activities are based on DOE encouragement of the voluntary consortium of public and private utilities organized under the Utility Photovoltaic Group (UPVG) and independent power producers (IPP's); and on DOE partnerships with members of the consortium, private industry, and state and local government entities interested in electric power delivery, industrial and economic development, and in preserving and enhancing the environment. This effort continued over six years will result in the installation of 50 MW of photovoltaic systems. This activity is directed at accelerating the use of photovoltaic systems by overcoming market barriers. The barriers include user and investor confidence in the operation and suitability of the applications, risk reduction for users and investors relative to economic feasibility of applications, and need for large cost reductions associated with commitments by module producers to larger-scale production. Resolution of these issues through this initiative will lead to large numbers of new jobs, accelerated growth of high technology industry, accelerated commitments to larger-scale	CLIMATE CHANGE ACTION PLAN: (MARKET MOBILIZATION:) Continue funding at FY 1995 level. FY 1996 funding will continue to be used to (1) accelerate the commercialization and market penetration of presently cost-effective and near-term, cost-effective photovoltaic applications among utility and commercial users and (2) undertake competitively-selected commercial- and utility-scale demonstrations of photovoltaic technology and applications that are cost shared by participants on at least a 2 (proposers) to 1 (DOE) basis. Both of these activities are based on DOE encouragement of the voluntary consortium of public and private utilities organized under the Utility Photovoltaic Group (UPVG) and independent power producers (IPP's); and on DOE partnerships with members of the consortium, private industry, and state and local government entities interested in electric power delivery, industrial and economic development, and in preserving and enhancing the environment. This effort continued over six years will result in the installation of 50 MW of photovoltaic systems. This activity is directed at accelerating the use of photovoltaic systems by overcoming market barriers. The barriers include user and investor confidence in the operation and suitability of the applications, risk reduction for users and investors relative to economic feasibility of applications, and need for large cost reductions associated with commitments by module producers to larger-scale production. Resolution of these issues through this initiative will lead to large numbers of new jobs, accelera'

III. Photovoltaic Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Collector Research and Systems Development (Cont'd)		module production by the photovoltaic industry, compliance and reduction of emissions, in general, (and CO2, in particular) in electric power generation (environmental enhancement), and accelerated cost reduction in module manufacture to the benefit of both the domestic and export photovoltaic markets. (GO, NREL, SNL) ($18,000)	growth of high technology industry, accelerated commitments to larger-scale module production by the photovoltaic industry, compliance and reduction of emissions, in general, (and CO2, in particular) in electric power generation (environmental enhancement), and accelerated cost reduction in module manufacture to the benefit of both the domestic and export photovoltaic markets. (GO, NREL, SNL) ($18,000)
	Continue design assistance services to provide up-to-date design practices and technical interface with new users. (SNL) ($2,000)	Continue design assistance services to provide up-to-date design practices and technical interface with new users. (SNL) ($2,000)	Continue design assistance services to provide up-to-date design practices and technical interface with new users. (SNL) ($2,000)
	$40,345	$56,000	$51,606
Capital Equipment	Replace obsolete materials and devices characterization equipment with state-of-the-art equipment. Purchase new high-sensitivity scanning auger microprobe and gas-source molecular beam epitaxy system to provide support for industry analysis of devices and modules. Improve measurement capability through the construction of a solar simulator and accelerated life time simulator and replace obsolete and failing equipment. (NREL, SNL) ($3,590)	These funds will permit the continuation of refurnishing the solar energy research facility (SERF) at NREL with latest technology measurement and evaluation equipment. A small amount will be used for upgrading some of the older facilities at the SNL. (NREL, SNL) ($1,000)	These funds will largely complete the refurnishing of the solar energy research facility (SERF) at NREL with latest technology measurement and evaluation equipment. A small amount will be used for upgrading some of the older facilities at the SNL. (NREL, SNL) ($3,970)
	$3,590	$1,000	$3,970
Subtotal, Utility Sector	$74,881	$87,527	$88,129

III. Photovoltaic Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Photovoltaic Systems	$74,881	$87,527	$88,129

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Solar Thermal Energy Systems

Solar Thermal Energy Systems program elements address the energy security and environmental quality goals of the Energy Policy Act of 1992 (EPACT) through continued U.S. development of an environmentally sustainable energy resource: the sun. Direct application of the solar resource to the production of electrical power in the utility sector or the detoxification of hazardous waste in the industrial sector combines these goals effectively.

UTILITY SECTOR - Solar Thermal Generation Systems provide a wide spectrum of environmentally clean, modular, distributed, and short construction time options to utilities and potential independent power producers. Over 355-MWe of solar thermal trough systems were added to the Nation's energy supply in the 1980s -- enough to serve the residential needs of 500,000 people -- saving the energy equivalent of 2.3 million barrels of oil per year. The Solar Thermal Power Program has concentrated on improving the cost effectiveness of existing trough systems, performing research and development to improve the cost effectiveness of components, and developing new systems which are more efficient and more reliable to better meet utility requirements for availability and dispatchability (power towers), distributed systems (25-kWe dish/engine systems), and off-grid systems (7.5-kWe dish/Stirling engine systems). These advanced solar thermal electric systems are projected to decrease the levelized energy costs from 10 to 12 cents/kWh for current trough systems to 5 to 6 cents/kWh for commercial power tower and dish/engine systems around 2000 to 2005.

The research and development achievements of the past decade have produced commercial-scale concentrators; molten salt pumps, valves and receivers; and reflux receivers for Stirling engines whose test performance assessments indicate that cost-competitive systems can be deployed by the last half of this decade for distributed dish/engine systems (for both grid and non-grid applications) and for power tower systems. R&D efforts are focused on a long-term goal of producing power at 5 to 6 cents/kWh in the electric energy market. R&D task areas include "Technology Development" and "Commercial Applications". Technology Development efforts will emphasize the component performance testing of prototype hardware for membrane concentrators (both dishes and heliostats), which promise significant reductions in cost and weight; kinematic and free-piston Stirling engines for high-efficiency, reliable operation, and low-cost dish systems; reflux receivers for long-life, hybrid operation of dish/engine systems; and direct absorption receivers for higher-efficiency, lower-cost power tower systems.

The increased environmental concerns of utilities and industry (due to the Clean Air Act and State legislation, and the modular and distributed nature of solar thermal electric systems), and the growing awareness and acceptance of the cost competitiveness of solar thermal electric systems, have significantly increased the interest by the industry and the user communities in commercializing these technologies. In response to marketplace requirements for the 1990s and early 2000s, the Department has reoriented the emphasis of the Solar Thermal Electric Program from research and development (60 percent in FY 1991), to cost-shared commercialization application projects (70 percent in FY 1996). During the last three years, the Department has initiated five joint-venture programs with the private sector to commercialize such technology applications as: solar parabolic troughs, power towers, and dish/Stirling power generation systems for both central station and distributed loads. The responses by the industry to these cost-shared programs have indicated a strong interest and belief in, and commitment to, the 50/50 cost-shared joint-ventures to achieve commercial opportunities both domestically and worldwide by 1996-2000. Through FY 1994, over $100 million in 50/50 cost-shared projects have been initiated with industry.

Power tower systems for intermediate utility markets are designed to achieve high-capacity factors using integral thermal storage, thereby accruing full capacity credits even during periods of low insolation. There are eight utilities and several industrial organizations providing 50 percent of the $49 million required to convert (and operate) Solar One from a water/steam system to a molten salt power tower system (Solar Two). Two of the utilities, Southern California Edison and Sacramento Municipal Utility District, are developing plans for the acquisition of at least two commercial 100-MWe power tower projects upon the successful conclusion of the Solar Two program. The project is well into the third

phase (Detailed Design/Equipment Fabrication) and remains on schedule and within budget. Cummins Power Generation, Inc. is cost sharing 50 percent of the development of a 7.5-kWe dish/Stirling system for off-grid/remote applications. The engine rating for this program was recently increased from 5-kWe to 7.5-kWe, which decreased expected specific system costs ($/kWe) by 50 percent. Industry sees this significant performance improvement as the basis for these systems to be sold both in U.S. markets and worldwide for water pumping and other similar applications by 1997. The Department has issued a solicitation for the commercial development of a 25-kWe dish/engine distributed generating system. Two industry/utility consortia have been selected and a third cooperative agreement is being negotiated. Two of the three will be selected to proceed into Phase 2. The agreements will culminate in 1 to 2.5-MWe modular plants being built and grid-connected at user sites to demonstrate the technology. All three responders presented business options to commercialize these systems once this multi-year program is completed. In addition to the utility and industry teams which directly responded, Southern California Edison committed up to $1.5 million in direct and indirect support towards the development and demonstration of this technology. In FY 1995, a 50/50 cost-shared program to decrease operation and maintenance costs by 50 percent will be completed at the 160-MWe Kramer Junction solar trough plant. In FY 1994, a manufacturing initiative was introduced to improve manufacturing productivity, cost competitiveness, and quality and control activities for solar electric components. This activity is directed at maintaining American industrial capacity as a worldwide manufacturing leader. A solicitation for glass/metal heliostats was issued, and subsequent procurements will be directed to other critical solar thermal components. In FY 1996, several studies will be conducted by industry to evaluate the best commercialization strategies for solar thermal systems as part of possible defense conversion options for the Nevada Test Site. As a result of these efforts, several attractive production options have been identified that will yield lower-cost hardware in early applications of solar electric technologies, thus enhancing early commercialization efforts. Each of these six cost-shared initiatives are expected to allow U.S. industry to commercialize solar thermal systems in the late 1990s and to maintain a pre-eminent capacity to export power tower and dish/engine systems worldwide.

Performance Measures: A multi-year 50/50 cost-shared development program has been initiated with user and industry consortia to commercialize solar thermal technology in the 1996 to 2000 time period in three market areas: power towers for intermediate loads, 25-kWe dish/Stirling end-of-the-line distribution systems, and remote power 7.5-kWe dish/Stirling systems. In 1996, over 30 units of 7.5- and 25-kWe dish/Stirling systems totaling 500 kWe generation capacity will be deployed at user sites to demonstrate the availability and performance of these systems. The contractors on the 7.5-kwe dish/Stirling system will be exploring international markets for the system in 1996. Over twenty organizations will be maintained and four new ones added to the 50/50 cost-shared joint ventures. One international demonstration of a trough system will also be initiated. The 10 MWe power tower (Solar 2) construction and system checkout will be completed and full scale testing is initiated. There are eight utilities and over five industrial companies in this 50/50 cost-shared project.

Output Measures: Over 700 MWe of solar thermal electric systems should be deployed by 2003 in the U.S. and internationally. The market for these systems should exceed 5,000 MWe by the year 2010 --- enough to serve the residential needs of 7,000,000 people or saving the energy equivalent of 46 million barrels of oil per year.

Activities under Utility Sector - Solar Thermal Systems within the Solar Thermal Energy Systems decision unit have been retitled to represent a more appropriate focus as the program has matured.

INDUSTRY SECTOR - The vision of the Solar Industrial Program is to supply significant quantities of solar energy to the industrial sector. Solar energy can support the industrial sector by displacing 4 of the 15 quads of process heat that industry will need by the year 2030; increasing energy security, creating new jobs, and greatly reducing the amount of carbon dioxide emitted to the atmosphere. It can be used to destroy many hazardous chemicals; helping industry comply with clean air and clean water regulations. It can also make more efficient use of strategic materials, lowering product costs, and providing new industrial technologies for export. Although the cost of solar thermal energy has decreased significantly over the last decade, it is still more costly in most applications than fossil fuels. Reductions in cost through technology development and manufacturing improvements will make it competitive with natural gas in large areas of the West and South by the turn of the century. The lack of familiarity with the technology is also a barrier to its commercialization. The Solar Industrial Program is helping reduce the cost of solar technology to position it for near-term industrial markets and is cost sharing in projects that will familiarize (and build confidence in) the technology throughout the industrial sector.

The program is focusing on three technical areas: process heating, detoxification of hazardous wastes, and advanced industrial processes. Process heat and detoxification offer near-term markets for the technology that emphasize the benefits and compatibility of solar technology to

I. Solar Thermal Energy Systems (Cont'd)

both energy and the environment. Many states, driven in part by environmental regulations, are interested in evaluating the potential of solar thermal energy. The program's strategy is to help spark this interest through technical assistance and cost-shared projects. There is also interest by industry and government in developing new technology that can help solve the Nation's environmental problems. This offers a market opportunity for the solar destruction of hazardous chemicals. The advanced industrial processes part of the solar program is research oriented, looking for mid- and long-term industrial applications, such as using solar energy to give materials superior properties. This will help industry gain a competitive edge in the development of new products. It will also broaden the production base of the solar industry, increase familiarity with the technology, and help further lower the cost of the technology for all applications.

Since initiating the solar process heat program in FY 1991, the Solar Industrial Applications program has established cooperative projects with California, Florida, Colorado, and Virginia, and assisted industry in identifying near-term markets for solar process heat. It is working closely with DOE's Federal Energy Management Program (FEMP) to initiate solar projects within the Federal sector. Many state and Federal energy managers desire DOE assistance in evaluating solar thermal systems. The Solar Industrial Program is responding to this interest by providing information, technical assistance, and cost sharing projects.

Since initiating the solar detoxification program in FY 1990, solar technology has been adapted to destroy hazardous chemicals in water, soil, and air. This application has progressed rapidly with increases in system efficiency and successful field experiments that proved the technology can effectively and inexpensively destroy many hazardous organic wastes. Cost shared detoxification projects with industry, EPA, and DOD not only leverage DOE funds but acquaint large potential users with the technology and will position it for initial market penetration in FY 1996. The program is assisting industry in commercializing this new technology, which is becoming the least costly alternative for a number of industrial waste applications.

Cooperative agreements between NREL and industry in solar materials processing will lead to a one step method of bonding metal to ceramics and an inexpensive method of making fullerenes; a newly discovered form of carbon that is expected to be used in many new commercial products. The technical feasibility of the metal bonding processes will be completed by FY 1996, adding another application with which solar energy can help industry.

In FY 1996, contracted research will be about 37 percent. Cost-sharing with industry and other government agencies is expected to leverage the DOE program by at least $6 million.

Output Measures: ENERGY: Solar energy could displace up to 2.1 exajoules (EJ) (2 quads) by the years 2010 and up to 4.2 EJ (4 quads) by 2030 of the energy needed for industrial process heating applications in the United States. Achieving this level of substitution of solar industrial energy for fossil energy would save 36.2 and 72.4 million metric tons (MMT) of carbon equivalent greenhouse gas emissions respectively. These possibilities, however, are dependent on the cost of solar energy relative to fossil fuels. During the last ten years, the cost of thermal energy from parabolic trough solar collectors has decreased from $40/MMBtu to about $8/MMBtu. Development completed during 1994 on anti-reflective coatings and black nickel provided the most recent contribution to this decrease: a 10% improvement in system efficiency. Further tasks will be undertaken in FY 1996 to help the solar industry lower costs in order to compete with natural gas, presently at about $5/MMBtu. ENVIRONMENT: There are almost 20,000 water detoxification sites nationally, with an associated treatment volume of 28 giga cubic meters (Gm3) (7.5 trillion gallons) per year. Approximately one-fourth of these sites are located in high solar insolation regions of the country. There are an estimated 0.82 teragrams (Tg) (730 million tons) of soil needing detoxification, more than a third of which is located in areas of high solar insolation. The Clean Air Act is causing industry to identify and reduce their emissions to the atmosphere. Solar energy can be used to destroy toxic and hazardous chemicals emitted from hundreds of thousands of industrial processes. To have an impact on these environmental needs, the solar detoxification process must be low cost, reliable, and able to satisfy applicable environmental regulations. Improvements in design and system efficiency have resulted in cost reductions of 75% during the last five years; attracting the interest of several companies who are now working to commercialize the process. Further improvement appears imminent and is expected to make the process very competitive for groundwater remediation by FY 1996. Other detox applications, such as removal of toxic chemicals from air streams generated by the electronics industry and dry cleaners should follow soon after. The use of solar energy as a replacement for fossil fuels will also reduce the amount of CO_2 emissions by approximately 0.5 billion tons per year by the year 2030. ECONOMY: The use of solar energy would creat 67,000 new jobs for each quad of energy it produced.

II. A. Summary Table: Solar Thermal Energy Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector - Solar Thermal Systems				
Technology Development	$ 6,471	$ 6,500	$ 6,379	$ -121
Commercial Applications	17,061	16,901	19,190	2,289
Capital Equipment	494	500	496	-4
Subtotal, Utility Sector - Solar Thermal Systems	$ 24,026	$ 23,901	$ 26,065	$ 2,164
Industry Sector - Solar Industrial Applications				
Solar Detoxification	$ 3,453	$ 3,395	$ 3,349	$ -46
Solar Industrial Processes	3,886	3,962	4,330	368
Capital Equipment	0	200	199	-1
Subtotal, Industry Sector - Solar Industrial Applications	$ 7,339	$ 7,557	$ 7,878	$ 321
Total, Solar Thermal Energy Systems	$ 31,365	$ 31,458	$ 33,943	$ 2,485

II. B. Laboratory and Facility Funding Table: Solar Thermal Energy Systems

National Renewable Energy Lab	$ 5,964	$ 10,555	$ 10,525	$ -30
Sandia National Laboratories	14,085	18,526	18,775	249
All Other	11,316	2,377	4,643	2,266
Total, Solar Thermal Energy Systems	$ 31,365	$ 31,458	$ 33,943	$ 2,485

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solar Thermal Energy Systems			
Utility Sector - Solar Thermal Systems			
Technology Development	FORMERLY TITLED COLLECTION AND CONVERSION: A collaborative cost-shared subcontract between National Renewable Energy Laboratory and the 3M Company has led to a commercial version of a silver polymer coating. This coating, based on accelerated weathering tests, is projected to meet program goals of an effective life time of 10 years. An effort was initiated to demonstrate commercial production processes and supply this material at no cost to four solar companies for demonstration and testing purposes at four different sites. A second planned commercial support effort is a limited 50/50 cost share offer for solar companies who want to use new optical materials in commercial projects. Awarded an additional industry cost-shared contract to raise to four active efforts to produce high performance, long durability, low cost, and highly reflective films. Continued internal laboratory research for specialized delamination treatments, new films, and hard-coat protective surfaces. The new techniques and their demonstrations will ensure user acceptance of stretched-membrane technology and establish U.S. industry pre-eminence. (NREL) ($1,390)	Continue collaborative effort to supply commercial-grade polymer reflector materials to solar companies for demonstration and test purposes. Provide successful film options for pilot testing on joint-venture stretched-membrane dishes and heliostats to be operated under actual conditions, including stowage, cleaning and field operation. Continue accelerated testing and outdoor long-life testing of successful industry candidates for stretched-membrane films. Improve correlation of accelerated test results with predictable long-life capabilities. Provide assessment to industry of early test results from initial candidates. Successful demonstration testing will establish cost-effective stretched-membrane technology as a viable component and U.S. industry pre-eminence. (NREL) ($1,450)	Expand to three the number of companies and reflector materials to be produced at a commercial pilot scale. Several candidates are being pursued which can reduce the current cost of solar mirrors by 50%. Demonstrate at least one hard-coat system which will support a 10-year life projection. Review two year outdoor testing data for support of 10 year life for advanced reflective materials. Continue accelerated testing and outdoor long-life testing of successful industry candidates for stretched membrane films. Expand the number of films included in commercial projects. These demonstrations will help establish U.S. industry pre-eminence. (NREL) ($1,229)

542

III. Solar Thermal Energy Systems (Cont'd):
Utility Sector - Solar Thermal Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Development (Cont'd)	Completed review of design of prototype single-element stretched-membrane dish (80-100 sq.m.). Initiated effort to proceed with commercially viable prototype design. Completed modification of multi-faceted dish concentrator for better optical performance. Completed optical testing of multi-faceted dish. (SNL) ($504)	Initiate manufacture of single-element stretched-membrane dish, using a 25-kWe Stirling engine, to demonstrate superior performance and uniform flux distribution. Complete life test of stretched-membrane facets and test of multi-faceted dish/stirling system. Support industry designs for utility- and remote-scale joint-ventures (using stretched-membrane films) with analysis, testing and facet fabrication. Support efforts to improve optical performance of facets and incorporate improved durability optical materials. (SNL) ($650)	Complete manufacture of single-element stretched-membrane dish. Continue support for industry designs for utility- and remote-scale joint ventures (using stretched-membrane films) with analysis, testing and facet fabrication. Support efforts to improve optical performance of facets and incorporate improved-durability optical materials. (SNL) ($800)
	A solicitation for a contract for first-generation stretched-membrane heliostats (1,500 sq.m.) to be deployed at Barstow, CA was released as part of the ADVANCED MANUFACTURING INITIATIVE. This contract will allow industry to verify cost projections for mass-produced heliostats. (SNL) ($484)	Continue fabrication of stretched-membrane heliostats (1,500 sq.m.) to be deployed at Barstow, CA. An additional purchase of 8,500 sq.m. will be considered in subsequent years based on the lessons learned. (SNL) ($800)	Complete installation and initiate testing of stretched-membrane heliostats (1,500) sq. m. to be deployed at Barstow, CA. (SNL) ($900)
	Completed 1,000 hours of on-sun testing on Cummings artery-free heat pipe. Completed development and qualification tests on industry-manufactured prototype reflux receivers. Awarded contract to Porous Metal Products to develop a receiver with a felt metal wick. Developed and tested commercially viable pool-boiler receivers. Issued a solicitation to industry for fabrication and test of second-generation hybrid (solar/natural gas) reflux receivers. These will be commercial prototype receivers for 25-kWe Stirling engines and candidates for use on utility-scale joint-venture dish/engine systems. (SNL) ($1,689)	Complete fabrication and initiate on-sun test of second-generation hybrid (solar/natural gas) reflux receivers for 25-kWe dish/engine systems. Initiate effort on high-temperature receiver for Brayton cycle system. These developments support a wider range of industry dish/engine options. (SNL) ($1,500)	Complete on-sun testing of second-generation hybrid (solar/natural gas) reflux receivers for 25-kWe dish/engine systems. Test high-temperature receiver for Brayton cycle system. These efforts help ensure the success of the utility-scale Joint Venture activity (SNL) ($1,400)

III. Solar Thermal Energy Systems (Cont'd):
Utility Sector - Solar Thermal Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Development (Cont'd)	Completed fabrication of second hybrid receiver and performed on-sun tests of prototype systems for 20 hours. (NREL) ($425)	Perform longer-term tests of one of the hybrid reflux receivers for 1000 hours. (NREL) ($200)	Support industry to resolve technical, construction, emissions, operability issues to incorporate hybrid/receiver systems on remote-scale and utility-scale joint venture projects. Hybrid receivers are expected to enhance utility acceptance of dish/engine systems for varied on- and off-grid applications. (NREL) ($150)
	Continued performance mapping and on-sun life tests of modified 25-kWe kinematic Stirling engines with heat-pipe receiver. Awarded contract to Northern Research and Engineering Corporation to initiate design and fabrication of a new dish/engine system based on the Brayton cycle. (SNL) ($949)	Initiate fabrication and some testing of new industry dish/engine systems based on Brayton engines. Perform on-sun test of above engine on existing industry or test bed concentrators. This system is being considered as an alternative for one of the utility-scale joint ventures. This activity will permit U.S. industry to expand their market for solar thermal electric systems to domestic and international markets. (SNL) ($850)	Incorporate new high-temperature gas receiver on Brayton cycle system and complete on-sun test of this system. Continue life-test of Stirling and Brayton cycle systems on-sun. (SNL) ($900)
	Provided technology support on molten salt pumps, valves, and transport systems in support of Solar Two project at Barstow, CA. Tested specific componets prior to placing bids to verify compatibility with design specs. (SNL) ($1,030)	Provide technology support on molten salt pumps, valves, and transport systems in support of Solar Two project at Barstow, CA. Initiate study of feasibility of combined cycle power tower, as a design option. (SNL, NREL) ($1,050)	Provide technology support on molten salt pumps, valves, and transport systems in support of Solar Two project at Barstow, CA. Initiate activity to test advanced molten salt receiver. (SNL) ($1,000)
	$6,471	$6,500	$6,379

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III. Solar Thermal Energy Systems (Cont'd):
Utility Sector - Solar Thermal Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Commercial Applications	FORMERLY TITLED SYSTEMS DEVELOPMENT:		
	Continued to perform system analyses, evaluated development options, and assessed market opportunities for power tower, dish, and trough systems in support of 50/50 cost-shared projects being built and tested for commercial opportunities in the 1990s. Identified an attractive hybrid power tower option which can provide an alternative development path. Several cooperative activities were completed with States to incorporate solar thermal systems in State prison systems and other applications. Several military systems were evaluated. Continued educational briefings to users concerning solar thermal system capability. Supported local solar thermal manufacturers with independent analyses and design assistance. (NREL, SNL) ($1,226)	Continue to perform system analyses, evaluate development options, and assess market opportunities for power tower, dish, and trough systems in support of 50/50 cost-shared projects being built and tested for commercial opportunities in the 1990s. Continue to support solar thermal manufacturers and users with independent analyses and design assistance. Evaluate the utilization of the Nevada Test Site as a Solar Interprise Zone. Continue to support industry evaluation of international opportunities for solar thermal electric technologies. (NREL, SNL) ($1,200)	Continue to perform system analyses, evaluate development options, and assess market opportunities for power tower, dish, and trough systems in support of 50/50 cost-shared projects being built and tested for commercial opportunities in the 1990s. Continue to support solar thermal manufacturers and users with independent analyses and design assistance. Complete development options to be employed at Nevada Test Site for troughs, dish and power tower systems. Continue to provide design assistance to solar thermal manufacturers and users. Continue to support industry evaluation of international opportunities for solar thermal electric technologies. (NREL, SNL) ($2,521)
	Initiated fabrication and assembly of ten design validation modules for the 7.5-kWe dish/Stirling systems. Initiated tests at utility sites. (SNL) ($1,600)	Complete 50/50 cost-shared fabrication and assembly of ten design validation prototype modules for the 7.5-kWe dish/Stirling systems. Complete tests on these units at utility sites. After these tests, the contractor will be in a position to test 10 manufactured prototypes from which they will be able to commit to an engine manufacturing facility on the basis of these test results and commercialize these systems by 1997 without further government support for prototype development. (SNL) ($1,400)	Initiate the third phase of the project to test 10 manufactured prototypes from which Cummins Power Generation Corp. will be able to commit to a solar/engine manufacturing facility. The contractor is exploring business opportunities for these systems at the conclusion of this program. (SNL) ($850)

III. Solar Thermal Energy Systems (Cont'd):
Utility Sector - Solar Thermal Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Commercial Applications (Cont'd)	Initiated Phase I design and fabrication of two utility-scale (25-kWe) dish/engine systems. A third co-operative agreement is being negotiated. This is a 50/50 cost-shared project. (SNL) ($4,420)	Complete Phase I assembly and proof-of-concept testing of utility-scale (25-kWe) dish/engine systems at utility sites. Initiate Phase 2 "design validation" activities on modules for 25-kWe dish/engine systems for two contractor teams. Initiate Phase I of the third co-operative agreement. This is a 50/50 cost-shared project. (SNL) ($8,950)	For the utility scale (25kWe) dish/engine systems, all Phase I testing is complete. Phase II fabrication and assembly is complete. Testing of Phase II design validation modules is proceeding. (SNL) ($10,619)
	Continued implementation and evaluation of O&M improvements in troughs to reduce O&M costs by 50 percent. This is a 50/50 cost-shared project. (NREL, SNL) ($1,000)	Complete implementation and evaluation of O&M improvements in troughs to reduce O&M costs by 50 percent. This is a 50/50 cost-shared project. (NREL, SNL) ($1,000)	The project was completed in the prior year. ($0)
	Initiated detailed design of the 50/50 cost-shared project to modify Solar One to operate with molten salt for a consortium of utilities. This project (Solar Two) is a system validation which should permit the utilities to initiate a 100-MWe plant by 1998. (GO, SNL) ($7,600)	Complete construction and perform system check-out of the 50/50 cost-shared project to modify Solar One to operate with molten salt for a consortium of utilities. Initiate operation and maintenance of facility in test mode. This project (Solar Two) is a system validation which should permit the utilities to initiate a 100-MWe plant by 1998. Two utilities, Southern California Edison and Sacramento Municipal Utility District, are preparing plans to purchase 100-MWe commercial plants if Solar Two succeeds. (NREL, SNL) ($2,100)	Initiate full-scale testing of the 10MWe Solar Two plant. This project (Solar Two) is a system validation which should permit the utilities to initiate a 100-MWe plant by 1998. Two utilities, Southern California Edison and Sacramento Municipal Utility District, are preparing plans to purchase 100-MWe commercial plants if Solar Two succeeds. (GO, SNL) ($2,100)

III. Solar Thermal Energy Systems (Cont'd):
Utility Sector - Solar Thermal Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Commercial Applications (Cont'd)	ADVANCED MANUFACTURING INITIATIVE: Awarded contracts to power tower heliostat manufacturers. Issued notice of intent to industrial contractors, to evaluate advanced manufacturing efforts to improve productivity, quality and control in manufacturing techniques for dish/engine and trough components to enhance the early commercial applications of these systems. (NREL, SNL) ($1,215)	ADVANCED MANUFACTURING INITIATIVE: Continue contracts with power tower heliostat manufacturers. Award specific component contracts identified through Notice of Program Intent. (NREL, SNL) ($2,251)	ADVANCED MANUFACTURING INITIATIVE: Continue with Phase II of heliostat contracts for low-cost solar collectors. Continue component contracts for other low-cost subsystems. (NREL, SNL) ($3,100)
	$17,061	$16,901	$19,190
Capital Equipment	Purchase surface deposition equipment, a second weatherometer, a solar simulator, and a second spectrometer for optical material development. (NREL, SNL) ($494)	Purchase equipment for optical material development and analysis, and support equipment for receiver and dish/engine tests. (NREL, SNL) ($500)	Purchase equipment for optical material development and analysis, and support equipment for receiver and dish/engine tests. (NREL, SNL) ($496)
	$494	$500	$496
Subtotal, Utility Sector - Solar Thermal Systems	$24,026	$23,901	$26,065
Industry Sector - Solar Industrial Applications			

III. Solar Thermal Energy Systems (Cont'd):
Industry Sector - Solar Industrial Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Solar Detoxification	Solarchem Environmental developed a new catalyst that uses a wider portion of the solar spectrum, making it a factor of up to ten times more efficient than the best previous catalyst in destroying a number of hazardous organic chemicals. This makes the technology competitive for many waste cleanup applications. Cost-shared water detox contracts initiated in FY93 produced system designs and led to negotiations for demonstration projects. Research, done in cooperation with EPA, showed that the photocatalytic process is effective in disinfecting water. A cooperative project was initiated with Intel Corp to use the technology to produce the ultrapure water required for making its electronic components. ($2,453)	Working with Solarchem and Dupont, catalyst improvement will continue, with emphasis on catalysts that use a wider portion of the solar spectrum. Catalyst development will also support industry commercialization efforts of solar detox; including control of the process and removal, rejuvenation, and reinjection of the catalyst. Construction will be completed and operation will begin of the demonstration projects at industrial waste sites. Operation of at least one demonstration will be completed during FY 1995. Lab studies will determine the effectiveness of the solar process to destroy contaminants of interest to Intel. ($2,204)	Support industry in producing a cost-effective advanced catalyst and demonstrate it at a field experiment. A second cost-shared water detox project will be completed. Technical support of the industry commercializing the technology will continue. This will include cost-sharing in the development of pilot systems and demonstrations. A demonstration will be completed at an Intel facility to produce ultrapure water from its waste water. ($1,500)
	A CRADA was signed with International Technology Corp (IT Corp) to develop the solar detoxification of air process. This effort focused on determining optimum catalyst loading, flow rates, and analysis of intermediate chemical products. IT's photocatalytic reactor was modified, significantly improving its efficiency. A CRADA with SEMATECH was initiated to apply the technology to the environmental needs of the electronic industry. ($300)	Working with IT Corp, the air detoxification process will be refined, making it more efficient and bringing it closer to a commercial process. A variety of hazardous chemicals will be tested to determine the extent of effectiveness of the process. The program will support IT Corp in experiments at waste sites. In coordination with SEMATECH, air emissions from the electronics industry will be tested for solar destruction. ($928)	Work with IT Corp will continue to support their efforts to commercialize the technology. In coordination with SEMATECH, a demonstration will be conducted at an electronics facility to demonstrate the effectiveness of air detox to treat airborne wastes from electronic processes. Another demonstration will be conducted at a paintbooth facility or at a drycleaner. ($1,849)

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III. Solar Thermal Energy Systems (Cont'd):
Industry Sector - Solar Industrial Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Solar Detoxification (Cont'd)	Design was completed of the Sierra Army Depot soil detox pilot plant. Instrumentation was installed at the site to gather solar insolation data. The detox system, being studied jointly by DoD, DOE, and EPA will be powered by a parabolic dish that concentrates the sun's energy 700 times normal sunlight. The combination of UV and infrared energy will destroy the mixture of hazardous chemicals contaminating the site. ($700)	The soil detox system will be built at the Sierra Army Depot. Its operation and evaluation will be completed. Further development of the process will depend upon EPA evaluation of the process's ability to destroy hazardous chemicals without formation of hazardous by-products and the Army's decision to complete the remediation of the Sierra waste site. ($263)	No Activities planned. ($0)
	$3,453	$3,395	$3,349
Solar Industrial Processes	Cost-shared material processing experiments done with Coors Ceramics and Brush-Wellman (B-W) were completed. Funding for the Coors process of making silicon carbide was shifted to DOE's Office of Industrial Processes after it was determined the process was more broadly applicable using standard furnaces. The process, developed by NREL, is estimated to reduce the cost of making silicon carbide powder by a factor of four and Coors plans to commercialize the process. Experiments proved that solar flux effectively joins metal to ceramics, solving technical problems for B-W. B-W began a detailed economic analysis of the process. Universities, industry, and the international community were solicited to identify new industrial applications of solar energy. The most promising was a process to produce Fullerenes, a newly decovered form of carbon that is being touted as the basis of many industral applications. A task was completed which surveyed methods of storing solar energy in chemicals. Although chemical storage	Depending on the results of Brush-Wellman's economic analysis of the metal joining process, design of a pilot plant will be completed and construction will begin at a B-W site. The pilot plant will provide sufficient information to enable B-W to decide on whether or not to commercialize the technology. Fullerenes will be evaluated to determine their market potential and the technical feasibility of their being produced with solar energy. Experiments will be conducted to determine the feasibility of using concentrated solar energy to initiate self-propagating, high-temperature synthesis reactions as a method for making ceramics. ($949)	Under the existing CRADA, support Brush-Wellman in the design of the pilot plant and assist in its evaluation. The pilot plant will test the use of concentrated sunlight to join metals to ceramics in a commercial application. Establish cooperative relationships with industry to explore the use of highly concentrated solar energy to produce Fullerenes and make ceramics from self-propagating reactions. New industrial applications of highly concentrated solar energy would be sought from universities and industry. ($1,000)

III. Solar Thermal Energy Systems (Cont'd):
Industry Sector - Solar Industrial Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Solar Industrial Processes (Cont'd)	of solar thermal energy would greatly expand its usefulness to the industrial sector; making it available whenever needed, it adds to the cost of solar energy and will not be used until the cost of solar energy is reduced further. ($1,373)		
	Working cooperatively with the solar industry, a technology development program was initiated to reduce the cost of solar process heat. Efforts focused on improvements in black nickel, a highly efficient solar absorber, and anti-reflective glass. Prefeasibility studies were initiated and completed. Projects resulting from earlier prefeasibility studies were cost-shared. One of these studies resulted in a project located in a remote fishing village in Mexico that provides the village its only source of refrigeration for preservation of fish. This system was damaged from two hurricanes and was subsuquently repaired. Discussions began to expand this project to other remote villages in developing nations. Projects in Virginia, New Mexico, Arizona, and Florida were cost shared. A project supplying space heating for Aveda, a manufacturing facility in New York, was completed. ($1,000)	The cost of solar process heat from parabolic troughs will be reduced through a technology development program that includes improvements in reflective surfaces and thermal receivers. Improvements in black nickel and anti-reflective glass will reduce system costs by 8 percent. This research, particularly the reflective material segment, will be undertaken in cooperation with the solar thermal electric program. Solar process heat projects will be cost-shared with industry. Efforts will be expanded on industrial solar refrigeration applications with the goal of reducing the cost of the solar ice making process by 50%. A cooperative program may be initiated with Mexico or other host country to supply refrigeration to remote villages. ($1,244)	To reduce the cost of solar process heat, effort will focus on the development of a durable, inexpensive reflective film for parabolic troughs Additional collaborative efforts will be established with solar equipment manufacturers to reduce the cost of the technology. Technology improvements will be completed in the solar ice-maker. A cost-shared project may be completed demonstrating the ice maker in a developing nation. The potential of opening international markets for solar process heat technology will be explored, possibly in conjunction with the Agency for International Development, World bank, or DOE's Export Council for Renewable Energy. ($800)

III. Solar Thermal Energy Systems (Cont'd):
Industry Sector - Solar Industrial Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Solar Industrial Processes (Cont'd)	Cooperative programs with the Air Force and Army were established to assist them in using solar energy to reduce their use of fossil fuels. DOD is the largest user of fossil fuel in the Federal Government and is thus a large potential user of solar energy. Activities included refurbishing old inoperative systems, building new cost-shared projects, and determination of life cycle savings. Specific military sites for solar projects were identified. DOE contributions to the projects were approximately 25 percent. Working with the Federal Energy Management Program (FEMP), which is managed by the Office of Building Technologies, facilities at EPA, GSA, and the Bureau of Reclamation were found suitable for solar process heat. Solar energy will help them comply with Executive Order 12902, which calls for increased energy efficiency at Federal facilities. ($700)	Solar projects identified at military facilities in FY 1994 will be initiated; construction, operation or monitoring will begin at a number of sites including Fort Carson, Fort Huachuca, Fort Irwin, and Luke Air Force Base. Other projects with EPA, GSA, VA, and the Bureau of Reclamation will also be cost shared. ($444)	Additional Federal sector solar process heat projects will be built, operated, and evaluated. Projects will support agencies such as EPA, GSA, Bureau of Reclamation, Army and Air Force to comply with Executive Orders to reduce their consumption of fossil fuels through increased use of solar energy. All projects will be done in cooperation with FEMP. The Program will also work with FEMP to change regulations which make it difficult and expensive for Federal facilities to acquire solar systems. ($800)
	In cooperation with the Office of Technical and Financial Assistance (OTFA), a number of states were assisted in identifying cost-effective opportunities for using solar energy to increase energy efficiency and reduce the environmental impact of industrial production processes. Activities included technical assistance and economic analyses. Cost-shared projects were completed and evaluated in Virginia. Additional projects were planned for Colorado and California. In cooperation with the OTFA, a conference was held to inform state energy managers of the benefits of solar process heat. ($813)	Assist California with technical assistance and up to 25% cost-sharing in providing solar heat for six prisons in the state. Assist Florida, Virginia, and Colorado in the evaluation of projects and studies begun FY 1994. Data from the projects associated with all solar process heat projects will be catalogued and disseminated. Work with utilities to identify demand-side management (DSM) projects. Cooperative programs with Tallahassee Electric and the Sacramento Municipal Utility District (SMUD) will begin. ($1,325)	Continue cooperative programs with California, Colorado, Florida, Hawaii, New Mexico, North Carolina, and other states to initiate, cost-share, and evaluate solar heat projects. Also work with utilities to provide solar heating systems to their industrial and commercial customers as a method of DSM. ($1,230)

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III. Solar Thermal Energy Systems (Cont'd):
Industry Sector - Solar Industrial Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Solar Industrial Processes (Cont'd)	This activity was postponed because of budget reductions. ($0)	No Activities. ($0)	Initiate an R&D program which will focus on advanced manufacturing processes that reduce system costs in low-volume production. This will allow cost reductions at moderate production levels, enabling a much more rapid deployment of the technology. The solar industry is comprised of small businesses struggling to survive in an era of historically low fossil fuel prices. Limited production and the inability to invest in modern capital equipment have prohibited them from lowering their costs. The focus in FY96 will be aimed at identifying and prioritizing the most important cost and manufacturing barriers. Cooperative efforts with solar manufacturers will be initiated. ($500)
	$3,886	$3,962	$4,330
Capital Equipment	No Activities. ($0)	Purchase equipment required to support catalyst development, the development of process heat technology, and modification of the NREL High Flux Solar Furnace. ($200)	Purchase equipment required to support development of industrial applications of solar detoxification and the monitoring of solar process heat projects. ($199)
	$0	$200	$199
Subtotal, Industry Sector - Solar Industrial Applications	$7,339	$7,557	$7,878
Solar Thermal Energy Systems	$31,365	$31,458	$33,943

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Biofuels Energy Systems

The Biofuels Energy System key activity integrates programs from the utility, industry, and transportation sectors and from the Office of Technical and Financial Assistance (OTFA). Together these programs provide the R&D base necessary for developing systems for producing and generating energy from biofuels. Bioenergy systems can provide products for three major world markets: electric power generation, transportation, and chemical production. Biomass energy has the potential to provide approximately 33 percent of U.S. energy needs and provide a secure source of energy. Furthermore, the markets that biomass technologies can serve are experiencing growing energy demand. In the electric utility sector, almost 90 gigawatts (GW) of new capacity are projected to be added in the U.S. through the first decade of the 21st century, roughly equivalent to 90 new nuclear or coal plants. Overseas markets for power are growing at twice this rate. The U.S. transportation sector has had and will continue to rely on petroleum-based fuels with a seven percent projected annual growth rate in transportation energy demand. In the chemical production sector, crude petroleum provides 53 percent of the feedstock requirements for primary petrochemicals; natural gas liquids supply 38 percent and natural gas eight percent. Biopower systems with efficiency close to natural gas combined cycles can generate power at competitive costs and create localized positive income and jobs impacts for a regional economy, with near zero net CO_2 inputs into the atmosphere.

The Biofuels Energy System programs respond to legislative and policy mandates. The program have five emphases: (1) to develop bioenergy crops and production methods that generate competitively priced feedstocks for use in power conversion and liquid fuel markets; (2) to develop and deploy biomass conversion technologies that produce power and/or biofuels; (3) to modify and deploy technologies for use with biomass derived fuels; (4) to demonstrate biofuel technologies; and (5) to assist commercialization and promote market penetration of these technologies. Industry is cost-sharing significant portions of these programs.

This key activity summary is organized by sector. Summaries of and performance indicators for sector Biofuels Energy Systems programs are outlined below.

UTILITY SECTOR

Biomass combustion currently accounts for approximately five percent of the total energy consumption in the U.S., primarily in the industrial, residential and utility sectors. Biomass electric generation capacity has grown from 200 megawatts (MW) in the early 1980's to more than 7,000 MW today. By the year 2000, 24 million MW-hours per year of generation or about $2 billion in annual retail electricity sales from biomass power is predicted for the U.S. and international applications.

The Biomass Power Program supports the development and deployment of high-efficiency gasification and direct combustion biomass technologies. The program addresses three areas: (1) critical technology developments (e.g. thermochemical conversion and direct combustion hot gas cleanup technologies) from FY 1993 to FY 1996; (2) field evaluation and market conditioning; and (3) cost-shared joint venture deployment projects in FY 1996 and beyond to help industry commercialize the technologies.

Research and development activities, which are leveraged by cost-sharing with industrial partners, focus on developing technically and commercially viable thermochemical conversion and direct-combustion biomass technologies. Development activities focus on cost-shared validations of direct-biomass combustion technologies, gasification systems, whole-tree energy and other advanced combustion biomass technologies. In addition, the program supports the development of dedicated feedstock supply systems nationwide to ensure that an environmentally acceptable closed-loop system for biomass electricity will be available by 2000. In FY 1996, the Biomass Power Program will develop a customer-based Geographic Information System (GIS) resource database for biomass systems developers to define where and how much

I. Biofuels Energy Systems (Cont'd)

biomass potential exists that can be economically grown and harvested.

To promote commercial development of these technologies , DOE issued a Letter of Interest to industry for 50/50 cost-shared case studies to develop technical and business plans for advanced biomass systems. These studies form the basis for the program's Cost-Shared Market Mobilization Collaborative. The Collaborative is participating in two initiatives:

-- Government/Industry projects focusing on demonstration and early market penetration of biomass technologies and on near-term climate change impacts

-- Biomass Energy Initiative which focuses on improving the integration of feedstock handling with larger and more advanced conversion system technology to reduce system costs and investor risk. This initiative is expected to lead to fully operational conversion facilities by 2000 and commercial plants by 2005.

These initiatives will help promote the revitalization of rural America by providing farmers with new sources of income.

The following progress and performance indicators will be used to measure the success of the Biomass Power Program:

-- Reducing the cost of electricity produced from biofueled technologies from 8 cents/kWh to less than 6 cents/kWh

-- Completing validation tests for direct-combustion and/or gasification biomass technologies by FY 2000

-- Establishing up to eight fully operational advanced biomass conversion systems by 2000

-- Increasing the number of industry partners involved in the program.

INDUSTRY SECTOR

The industry sector has two Biofuels Energy Systems programs: Municipal Solid Waste and Advanced Gas Turbine Systems for Biogas.

Municipal Solid Waste (MSW)

The Nation's municipal solid waste (MSW) -- the garbage and refuse from households, commercial buildings, and institutions (such as schools and hospitals) -- is a renewable source of energy which could provide over three quadrillion Btus (quads) per year. About two-thirds of this is available from the use of MSW as methane fuel and about one-third as energy saved by the recycling of materials. In addition, the billions of tons of wastes buried in municipal landfills in the past are biologically decaying, resulting in potentially significant environmental degradation.

The MSW program supports research, development, and deployment of technologies that convert MSW into methane gas. EPACT, Section 2013 and pending Environmental Protection Agency (EPA) regulations support methane recovery activities. Research and development efforts address technical issues related to the production, collection, and conversion of methane to energy. The program will continue to support R&D on anaerobic methane production from combined wastes. In FY 1996, DOE will pilot a 10,000 gallon high solids anaerobic digestion plant for converting MSW and tuna sludge to methane fuel. DOE will cost-share research through cooperative research and development agreements (CRADAs), competitive solicitations, and other means to make this resource viable.

Progress and Performance Indicators for MSW

-- Produce 0.60 quads/year of synthetic natural gas in 2010

I. Biofuels Energy Systems (Cont'd)

-- Reduce greenhouse gas emissions by one MMT of carbon equivalent per year based on reduced landfill gas emissions in 2000

-- Produce 2.1 quads of energy from MSW by 2010

Advanced Gas Turbine Systems for Biogas

The Advanced Turbine Systems (ATS) Program is an industry-DOE joint program to develop improved natural gas-fired turbines for industrial and utility use. Gas turbine-based power plants represent one of the most efficient, lowest cost power generation technologies available. In the last decade, gas turbines have captured over 50 percent of new capacity in the U.S. An Advanced Turbine System/biomass system will be more cost-effective, efficient, and environmentally cleaner than a conventional biomass-fueled power generation system.

As part of the Biomass Initiative, the ATS program will identify material technology suitable for use in those turbine parts exposed to biogas combustion. Technology under development in Fossil Energy's coal gasification program would be integrated into this program as much as applicable. This will form the basis for a first generation modified turbine targeted for 1998. Subsequent advances will be incorporated into turbines as required in Biomass Initiative demonstrations. The work will culminate with an ATS high efficiency turbine that is suitable for operation on biomass-derived gas.

Progress and Performance Indicators for ATS

-- Results available from corrosion tests of turbine components in biomass-fuel environment (1997)

-- First demonstration of biomass turbine prototype in 1998

-- Successful introduction of a final Biomass-Fired gas turbine in 2005 will enable the biomass gasification process to achieve marketable return on investment

-- Potential market for Biomass power in utility and industrial market exceeds 10,000 MW by 2020.

TRANSPORTATION SECTOR

The Biofuels Systems Program is conducting major ongoing strategic planning/quality management efforts. This process has led directly to a program realignment in goals and business development strategies that directly support those within the Office of Transportation Technologies and the Department at large. These goals involve new interactive ways of doing business with the private sector and draw upon an ever-increasing public constituency that supports economic growth without environmental degradation. Research goals have been established to produce ethanol for $.67 per gallon and methanol for $.50 per gallon by 2010.

The Biofuels Energy Systems program achieved a major milestone at the end of FY 1994 when the first-of-a-kind Process Development Unit (PDU) came onstream for the production of ethanol. This program accomplishment represents a major transition for the biofuels program from one that was mostly based on research results at the laboratory bench scale to one that will operate at a much larger scale, and which will support major industrial investment decisions relating to technology commercialization. Efforts will be made under the fiscal year 1996 budget to sustain the industrial momentum needed to push these important transportation fuel technologies through to commercialization by the late 1990s. Production technologies for ethanol, methanol, reformulated gasoline components, and biodiesel are all at the stage in development that by using waste feedstocks they are ready to be tested at a pre-commercial or small commercial prototype scale as transportation fuels. In a number of cases individual companies and industrial consortia are poised to take the next step of absorbing much of the risk, but still need Federal assurance to share some of the risk in developing these exciting and promising technologies.

While solving waste problems through the wise use of waste resource feedstocks to produce liquid transportation fuels is the major near-term focus of the biofuels deployment strategy, it is also recognized that core research programs being conducted at DOE's National Laboratories in

conjunction with other government, university, and private sector scientists and engineers are critical to improvements needed for larger market penetration of biofuels in the transportation sector. These research programs will focus on the development of dedicated energy crop feedstocks coupled with advanced cellulosic conversion technologies. Incremental advances as well as further breakthroughs are needed for integrated dedicated feedstock and conversion systems to become commercial; progress to date indicates that this can be accomplished with additional properly focused research and development work.

The Renewable Oxygenate Standard (ROS) that was recently passed by the U.S. Environmental Protection Agency will require that a certain share of the oxygenate in reformulated gasoline come from ethanol, ethyl tertiary butyl ether, or methyl tertiary butyl ether that is derived from renewable biomass resources. The ROS will provide an excellent catalyst toward the commercialization of biofuels derived from cellulosic feedstocks that are processed using biochemical and thermochemical processes that are being developed in this program area.

Although the near-term strategy focuses on using low cost waste feedstocks as a bridging strategy to expand the existing grain-based biofuels industry; DOE, through its research program, is developing fast growing trees and grasses as energy crops for a much larger market. The National Biofuels Roundtable, with membership from important stakeholders including environmental organizations, industry, and government developed 64 consensus environmental guidelines that should be followed for the deployment of energy crops to assure an environmentally and ecologically sound and fully sustainable energy resource.

Much of this crop development research takes place at land grant universities and through interagency agreements with the Agricultural Research Service and Forest Service of the Department of Agriculture. These crops are being developed for multiple energy related uses including biofuels, biomass power (electricity), and chemicals that could be produced in an integrated bioenergy plant.

The potential benefit to the nation from investing in the development of these renewable, domestically produced biofuels is substantial. Transportation's share of U.S. carbon emission (global warming gases) is approximately one-third of all U.S. emissions, and total transportation carbon emissions are expected to rise 23 percent by 2010. Biofuels are the major renewable supply side option for reducing carbon emissions from liquid transportation fuels. An independent study by a noted expert in the field indicates that ethanol used as a neat fuel would derive significant benefits when compared with either reformulated gasoline that uses methyl tertiary butyl ether (MTBE) derived from fossil sources or other alternative fuels. Current estimates indicate that 10.4 million metric tons (MMT) of carbon dioxide equivalent are saved when 1 billion gallons of neat biomass ethanol in dedicated vehicles replaces reformulated gasoline. Calculations also reveal that about 5.7 million metric tons of carbon dioxide equivalent are saved for every billion gallons of ethanol used directly as blends or as ethyl tertiary butyl ether (ETBE) rather than from MTBE from fossil sources. These ethanol and ETBE calculations and comparisons were made on a full fuel cycle basis. These estimates were based on the energy cropping systems and conversion processes that DOE is developing. However, they did not take into account the carbon sequestered in the standing biomass associated with these perennial systems or the possibility that the relatively large amounts of carbon dioxide released during fermentation could be easily collected and sequestered through deep well or deep sea injection. This stream could also be used to supply carbon dioxide to microalgae as well as producing many chemical products.

As alternative renewable fuels, biofuels can also make important contributions to the Nations' economic health through reductions in trade deficits resulting from imported oil and the development of job opportunities. Estimates of economic impact have been calculated based on the value added in the ethanol industry minus the loss of economic activity in the coal and petroleum industries. NREL estimates that almost 17,000 additional jobs would be created by 2010, if 3 billion gallons of ethanol were deployed.

PROGRAM ACCOMPLISHMENTS:

Feedstock Development:

-- In 1994, DOE and USDA collaboratively funded research on hybrid poplars in the North Central Region moved from the research to the demonstration phase. Four hundred acres of Conservation Reserve Program Land was successfully established in 1994 and 900 acres has been prepared for establishment in Spring 1995.

-- In 1991, DOE established a switchgrass development effort, including a crop breeding center, three agronomic research centers, and fi

I. Biofuels Energy Systems (Cont'd)

trials at more than 20 locations across the midwest region. The variety recommendations and multi-year record of high and stable switchgrass yields developed in these studies provided the data needed to project costs and risks of switchgrass-based biofuels production.

Biochemical Conversion:

-- A new genetically engineered organism has been developed at NREL which can ferment all common sugars in biomass at greater efficiency. It is estimated that this achievement will lower the cost of ethanol $.15 to $.20 per gallon.

-- A new pretreatment process has been developed. This achievement is expected to lower the cost of ethanol $.10 per gallon.

-- Genetically engineered organisms have been developed that produce highly efficient enzymes for converting biomass to sugar. The use of these new enzyme systems is expected to reduce the cost of ethanol by $.08 a gallon.

-- The construction of a biomass-to-ethanol pilot plant was completed at NREL in the summer of 1994. This facility has the capability of testing a wide range of biomass feedstocks for ethanol production and has a flexible design that can accommodate ongoing technical advancements.

PERFORMANCE MEASURES:

-- New hybrid poplar clones adapted to the North Central Region will be released to the public within 5 years. This is anticipated based on the fact that superior disease and pest resistance clones are being moved from nursery screening to field trials on four States this year.

-- The pilot plant is currently being used with our industrial partner, AMOCO Corp, to obtain engineering data for the design of a commercial ethanol plant. This design will lead to the construction of the commercial facility in FY 1996.

The Quality Metrics estimates of benefits from the biomass fuels program in the year 2010 are:

-- 0.39 million barrels per day of oil reduction

-- 58 million metric tons of carbon dioxide reduction

-- 195,000 net new jobs

TECHNICAL AND FINANCIAL ASSISTANCE

The Office of Technical and Financial Assistance's (OTFA) five Regional Biomass Energy Programs (RBEP) provide outreach activities necessary to promote widespread regional use of integrated energy crop technologies (i.e., provide technical assistance; participate in cost-shared demonstration projects; develop and provide reliable information on resources, fuels, and technologies; and encourage the formation of commercial markets for biomass resources.)

Recognizing the differing potentials and needs among States and regions is a major strength of the program in encouraging investment in biomass technologies that match local opportunities. The program compiles current and ongoing information about the composition, quantity, and location of regionally available biomass feedstocks and establishes and systematically reviews technologies to identify those most suitable for use with available biomass resources and which have practical application to regional energy and economic development needs. The program works extensively with States and others, both to identify and exploit opportunities specific to the locality, and to incorporate consideration of biofuels into their program, activity, and market planning.

1. Biofuels Energy Systems (Cont'd)

Performance Indicators:

In FY 1995, each region -- as part of its annual operating plan -- will develop and have in place specific regional performance metrics, and will report annually on their progress.

-- Increase the number of information products developed and distributed

-- Increase the number of attendees at sponsored events

-- Increase the number of projects sponsored and replicated

-- Increase the ratio of non-Federal to Federal dollars leveraged part in terms of

-- Increase the cumulative number of State/local jurisdictions that have removed legislative or regulatory barriers to the adoption of biomass energy technologies or practices

-- Obtain greater accuracy in responses to periodic public or target audience surveys of biomass energy awareness and knowledge, and of their related actions (level of investment in biomass energy technologies and practices).

II. A. Summary Table: Biofuels Energy Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector - Biomass Systems				
Thermochemical Conversion	$ 2,712	$ 2,100	$ 1,894	$ -206
Systems Development	7,007	16,109	31,226	15,117
Capital Equipment	97	100	100	0
Subtotal, Utility Sector - Biomass Systems	$ 9,816	$ 18,309	$ 33,220	$ 14,911
Industry Sector				
Municipal Solid Wastes				
Municipal Solid Waste Bioprocessing	$ 1,618	$ 1,522	$ 3,077	$ 1,555
Capital Equipment	0	0	0	0
Subtotal, Municipal Solid Wastes	$ 1,618	$ 1,522	$ 3,077	$ 1,555
Biomass Fuels				
Advanced Turbine System for Biogas	$ 0	$ 0	$ 1,984	$ 1,984
Subtotal, Biomass Fuels	$ 0	$ 0	$ 1,984	$ 1,984
Subtotal, Industry Sector	$ 1,618	$ 1,522	$ 5,061	$ 3,539
Transportation Sector - Biomass Fuels				
Feedstock Development	$ 5,753	$ 4,950	$ 6,839	$ 1,889
Biochemical Conversion	25,902	23,044	23,878	834
Thermochemical Conversion	5,600	4,200	5,458	1,258
Capital Equipment	2,911	2,809	1,984	-825
Subtotal, Transportation Sector - Biomass Fuels	$ 40,166	$ 35,003	$ 38,159	$ 3,156
Technical and Financial Assistance				
Regional Biomass Program	$ 4,230	$ 4,809	$ 3,940	$ -869
Subtotal, Technical and Financial Assistance	$ 4,230	$ 4,809	$ 3,940	$ -869
Total, Biofuels Energy Systems	$ 55,830	$ 59,643	$ 80,380	$ 20,737

II. B. Laboratory and Facility Funding Table: Biofuels Energy Systems

National Renewable Energy Lab	44,000	44,000	44,000	0
Oak Ridge National Lab	4,450	4,630	4,784	154

II. B. Laboratory and Facility Funding Table: Biofuels Energy Systems

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	7,380	11,013	31,596	20,583
Total, Biofuels Energy Systems	$ 55,830	$ 59,643	$ 80,380	$ 20,737

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Biofuels Energy Systems			
Utility Sector - Biomass Systems			
Thermochemical Conversion	Continued the development contract for unique hot-gas cleanup system equipment with Westinghouse Electric Co. (NREL) ($1,537)	Complete the development of a hot-gas cleanup system. Install a small-scale hot-gas cleanup system on the 100-ton/day gasifier in Maui, HI. (NREL) ($1,050)	Continue assessments of gas constituents and conditioning requirements for gasification. Develop measurement protocols. Develop new innovative hot-gas filtration systems to ensure compatability with high temperature turbines. (NREL) ($500)
	Awarded a contract to characterize a 10-ton/day indirect gasifier of a third U.S. company, and operated a small turbine on a 10-ton/day gasifier for 50 hours. Continued assessments of gas constituents and conditioning requirements. (NREL) ($485)	Continue contracts for 10-ton/day indirect gasifier characterization. Extend test time on small gas turbine. (NREL) ($300)	Complete hot-gas cleanup tests in 10 TPD indirect gasifier. (NREL) ($200)
	Completed determination of particulate emissions data from combustion. Alkali metal content in bio-crude oil has been reduced by two orders of magnitude. (NREL) ($300)	Evaluate bio-crude oil for diesel engine compatibility. (NREL) ($300)	Continue bio-crude oil tests for diesel engine compatibility. Initiate collaborative pyrolysis/diesel development programs with industry. (NREL) ($494)

III. Biofuels Energy Systems (Cont'd):
Utility Sector - Biomass Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Thermochemical Conversion (Cont'd)	Completed ash deposition study. A model for ash development as a function of combustion conditions and feed properties has been developed to allow better industry practices. (NREL) ($390)	No Activities. ($0)	Initiate collaborative DOE/industry ash deposition program for super-heater corrosion. (NREL) ($100)
	No Activities. ($0)	Initiate contracts with industry to prepare biomass feedstocks for use on powerplants. Determine energy requirements versus size and pelletizing costs. (NREL) ($100)	Conduct size reduction/densification studies for feedstocks such as switchgrass and straw. (NREL) ($350)
	Conducted preliminary tests of system performance, including measurements of gasification rates, gas quality, and ash carry-over. (NREL) ($0)	Perform hot-gas cleanup system tests on a 10% slip stream from the 100-ton/day gasifier. (NREL) ($350)	Initiate fuel cell collaborative development program, for coupling a fuel cell with a gasifier. (NREL) ($250)
	$2,712	$2,100	$1,894
Systems Development	Continued comparative analyses to identify the advantages, limitations, and economics of biomass power systems on a regional basis. Performed analysis of biomass repowering strategy. Held workshops and conferences on integrated systems development. Initiated geographic information survey of biomass resources for the Midwest. Completed design of direct combustion plant to operate on sawdust. (NREL, ORNL) ($2,338)	Provide design assistance to industry concerning issues relating to existing plants. Complete regional market technical assessment of available regional feedstocks and conversion systems. Complete evaluation of NOx (nitrogen oxide) emissions. Complete evaluation of advanced turbine and fuel cell biomass systems. Continue geographic information survey for Midwest. Complete construction of direct combustion plant to operate on sawdust. (NREL, ORNL) ($1,800)	Provide design assistance to industry concerning issues relating to existing plants. Perform the following program/systems activities: 1. Feedstock system environmental impact and benefit assessments. 2. Hold workshops and conferences on integrated systems development. 3. Do market assessments for domestic and international opportunities. 4. Expand geographic information surveys to additional states. 5. Complete direct combustion turbine test program. (NREL, ORNL) ($2,000)

III. Biofuels Energy Systems (Cont'd):
Utility Sector - Biomass Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Systems Development (Cont'd)	Several utility and industry groups have expressed interest in repowering or co-firing existing fossil plants with biomass. Completed case studies of biomass plant options at Tennessee Valley Authority (TVA) grid sites as part of a collaborative effort with EPRI. (NREL) ($330)	No Activities. ($0)	No Activities. ($0)
	Awarded industry case studies of cost-shared field demonstrations (70 percent (industry)/30 percent (government)), utilizing repowering or cofiring projects at utility grid sites. The results of case study analyses performed in collaboration with EPRI will be used to define a demonstration program. Awarded contracts to industry for cost-shared validation systems of direct-combustion and gasification technologies. This program will be continued under the CLIMATE CHANGE ACTION PLAN initiative in 1995. (NREL) ($4,239)	CLIMATE CHANGE ACTION PLAN: (MARKET MOBILIZATION:) The Department of Energy has identified over 20 consortia interested in pursuing the development of advanced technology biomass conversion facilities (which include biomass cofiring, repowering, gasification/gas-turbine and advanced direct-combustion projects) through cost-shared joint ventures. Twelve of these organizations will participate in cost-shared feasibility studies. This initiative provides the mechanism to move expeditiously from the studies to demonstrations of these technologies in the most feasible applications. The projects funded under this initiative will firmly establish U.S. technologies in the marketplace and enhance U.S. competitiveness abroad. A conservative analysis of applications indicates a 2000 MWe potential in the U.S. alone. While demonstrating commercial viability, these projects will also improve the currently depressed socioeconomic condition of rural communities through the establishment of dedicated biomass feedstock supply infrastructures. This in turn will assist future project developers in taking advantage of production incentive tax credits as provided in the Energy Policy Act of 1992. Deployment of these technologies will	CLIMATE CHANGE ACTION PLAN: (MARKET MOBILIZATION:) The Department of Energy had cofunded 11 projects with industrial consortia for development of biomass-to-energy systems involving integration of dedicated feedstock and conversion technologies. The majority of projects involve electricity, with four also involving ethanol production. As part of this Action Plan, the Department is cofunding with the State of Hawaii a gasification scale-up project, and is negotiating for a second cofunded gasifier scale-up project. These projects will be used as demonstrations of the integration of hot-gas cleanup systems and gas turbines. In addition, other cofiring, small farm, direct combustion or gasifier, etc., demonstration projects initiated in FY95 will be continued. The projects to be funded under this initiative will firmly establish U.S. technologies and significantly enhance U.S. competitiveness. (NREL, GO) ($20,000)

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III. Biofuels Energy Systems (Cont'd):
Utility Sector - Biomass Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Systems Development (Cont'd)		provide significant environmental benefits, including zero-net CO2 production, and reduced SOx and NOx emissions. (NREL, GO) ($14,309)	
	No Activities. ($0)	No Activities. ($0)	CLIMATE CHANGE ACTION PLAN/BIOENERGY INITIATIVE (MARKET MOBILIZATION): The Biomass Power Initiative will be devoted to the commercialization of biomass gasifiers/electric generation systems. In order to maximally affect the ability for these systems to impact rural America, the integration of the electric generating plant with dedicated feedstock supply systems will be emphasized. The activity will include the development of low-cost feedstocks for integrated electric generating plants and the investigation of materials to ensure the life and reliability of power-producing components. The initiative provides for the implementation of gasifiers into broad geographic regions of the agricultural community to utilize switchgrass, trees and other potential feedstocks. Cost-shared projects will be funded as commercial system demonstrations on utility grid-connected systems to reduce the financial risk for investors in these maturing technologies. The initiative is directed to support the use of high-efficiency gas turbine systems for several market segments. Support will be produced for electric generation projects for utility grids and others that supply electric power for ethanol, pulp/paper, and other biochemical product industries. While demonstrating commercial viability, these projects will also

III. Biofuels Energy Systems (Cont'd):
Utility Sector - Biomass Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Systems Development (Cont'd)			Improve the socioeconomic condition of rural communities through the establishment of dedicated biomass feedstock supply infrastructures. This in turn will assist project developers in taking advantage of production incentive tax credits as provided in the Energy Policy Act of 1992. (NREL, GO) ($9,226)
	Evaluate the marketing of energy byproducts from rice milling. (NREL) ($100)	No Activities. ($0)	No Activities. ($0)
	$7,007	$16,109	$31,226
Capital Equipment	Utility: Initiate purchase of gas simulation system with capability to inject contaminants to provide flexible engineering validation facility. (NREL) ($97)	Utility: Continue purchase of gas simulation equipment with capability to inject contaminants to provide flexible engineering validation facility. (NREL) ($100)	Utility: Continue purchase of laboratory equipment in support of biocrude and fuel cell R&D programs. (NREL) ($100)
	$97	$100	$100
Subtotal, Utility Sector - Biomass Systems	$9,816	$18,309	$33,220

III. Biofuels Energy Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Industry Sector			
Municipal Solid Wastes			
Municipal Solid Waste Bioprocessing	Design and construct scaled-up 10,000-liter high-solids digester for biochemical conversion research on accelerated methane gas production rates. Use research on multi-material feedstocks to assist EPA, the territorial assistance program, American Samoa, and the tuna processing industry to demonstrate the use of MSW and food processing wastes to produce methane and destroy high biological oxygen-demand and chemical oxygen-demand wastes. Continue to cooperate with the Office of Transportation Technologies on ethanol production. ($1,218)	Complete construction and begin testing of scaled-up 10,000-liter high-solids digester for biochemical conversion research on accelerated methane gas production rates. Use research on multi-material feedstocks to assist EPA, the territorial assistance program, American Samoa, and the tuna processing industry to demonstrate the use of MSW and food processing wastes to produce methane and destroy high biological oxygen-demand and chemical oxygen-demand wastes. Continue to cooperate with the Office of Transportation Technologies on ethanol production. ($1,040)	Complete testing of scaled-up 10,000 gallon high-solids digester for biochemical conversion research on accelerated methane gas production rates. Use research on multi-material feedstocks to assist EPA, the territorial assistance program, American Samoa, and the tuna processing industry to demonstrate the use of MSW and food processing wastes to produce methane and destroy high biological oxygen-demand and chemical oxygen-demand wastes. ($1,177)
	Continue landfill field test of gas capture and enhanced recovery. In conjunction with laboratory-scale leachate recycling tests, continue landfill modelling activities in order to accelerate methane production rate, increase yield by approximately 56 percent, and improve the quality of the product fuel gas. Continue cooperation with industry to accelerate the recovery of landfill gas. ($300)	In support of the Climate Change Action Plan initiative on expanded RD&D for methane recovery from landfills, continue landfill field test of gas capture and enhanced recovery. Continue landfill modelling activities in order to increase methane production rates based on results from laboratory latched recycling tests and field collected data. Continue cooperation with industry to accelerate the recovery of landfill gas including developing utilization approaches. This is a $1,500 effort with an estimated $1,100 to be derived from uncosted balances. ($400)	CLIMATE CHANGE ACTION PLAN: In support of the Climate Change Action Plan initiative on expanded RD&D for methane recovery from landfills. Conduct cost-shared field tests of both enhanced landfill gas generation and gas utilization. Continue landfill modelling activities in order to increase methane production rates based on results from earlier laboratory leachate recycling and field collected data. Continue cooperation with industry to accelerate the recovery of landfill gas. ($1,900)

III. Biofuels Energy Systems (Cont'd):
Industry Sector (Cont'd):
Municipal Solid Wastes (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Municipal Solid Waste Bioprocessing (Cont'd)	In support of Section 2013 of the Energy Policy Act of 1992, complete design of cost-shared demonstration of anaerobic digestion of municipal waste, sewage sludge, and other wastes. ($100)	In support of Section 2013 of the Energy Policy Act of 1992, provide expert technical assistance to community-scale projects of anaerobic digestion of municipal waste, sewage sludge, and other wastes. ($82)	In support of Section 2013 of the Energy Policy Act of 1992, provide expert technical assistance to community-scale projects of anaerobic digestion of municipal waste, sewage sludge, and other wastes. ($0)
	$1,618	$1,522	$3,077
Capital Equipment	No Activities. ($0)	No Activities. ($0)	No Activities. ($0)
	$0	$0	$0
Subtotal, Municipal Solid Wastes	$1,618	$1,522	$3,077
Biomass Fuels			
Advanced Turbine System for Biogas	No Activities. ($0)	No Activities. ($0)	CLIMATE CHANGE ACTION PLAN/BIOENERGY POWER INITIATIVE: As part of the Biomass Energy Initiative, initiate work of identifying and adapting materials technology for application in industrial gas turbines using fuel from biomass gasifiers. Transfer any applicable know-how from coal gasification program. Analyze particulate loading and corrosive elements in biogas stream. Expose candidate materials to simulated biogas turbine environment. Evaluate results of preliminary tests. ($1,984)
	$0	$0	$1,984

III. Biofuels Energy Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Biomass Fuels	$0	$0	$1,984
Subtotal, Industry Sector	$1,618	$1,522	$5,061
Transportation Sector - Biomass Fuels			
Feedstock Development	Terrestrial Crops: Leverage feedstock research funds with DOE's Office of Energy Research to obtain improved short rotation woody crops and herbaceous energy crops, using applied biotechnology, e.g., marker-assisted genetic linkage maps, tissue culture protocols, and transformation systems linked with traditional breeding programs. Leverage feedstock research with USDA, farm and environmental groups, EPRI, TVA, and other industry interests, to expand the potential yield and range of short rotation and herbaceous feedstocks by developing plant systems with a wider adaptability to environmental/economic limitations, such as drought, pests, storage losses, and biological sustainability for targeted high-potential regions. (ORNL) ($4,963)	Terrestrial Crops: The strategic intent of this program activity is to lead the nation in research, development, and demonstration of environmentally acceptable and commercially viable feedstock supply systems in a way that integrates and promotes multiple objectives in agriculture, energy, and environment so that up to 15% of U.S. primary energy demand can be met from biomass. For poplar research in the Pacific Northwest, North Central, and Southeast Regions, conduct molecular marker-assisted research to develop insect and disease resistant trees needed for widespread commercial development. Use classical breeding techniques augmented by tissue culture methodologies to develop switchgrass as a model herbaceous species for the South and in collaboration with USDA in the Midwest/Plains. Complete the jointly funded effort with the DOE--Biomass Power Division to develop a Midwest GIS. The GIS provides potential investors and government planners of biomass fuel and power plants with socio-economic, environmental, and infrastructural impacts in the region. A CRADA between ORNL and a private company will use the results of in-house drought tolerant research on osmotically active compounds as a molecular marker	Terrestrial Crops: These crops and cropping systems are being developed to support programs developing transportation fuels in OIT, biomass power in OUT, and alternative feedstocks in OIT. Research will develop economically viable model energy crops of existing integrated biomass feedstock development centers in the Pacific Northwest (Populus) and Southeast (Switchgrass), and Midwest Plains (Switchgrass and Populus). Develop economically viable model energy crops in the Northeast (Hybrid Willow), as well as initiate new trials in upper Midwest. Cooperative partners will include USDA Forest Service and USDA Agricultural Research Service, universities, Boise Cascade Corporation, the Consortium for Plant Biotechnology Research, Inc., and the Hybrid Poplar Transformation Cooperative. A new project, cost-shared with industry, will develop equipment systems for mechanizing the production of short-rotation woody crops. Mechanization costs can represent over one-half of feedstock production costs, and this effort at about $1 million is critical for near-term deployment of short rotation systems. Priorities for this project area, which will be developed in consultation with USDA and industrial cooperators, are expected to emphasize

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Feedstock Development (Cont'd)		selection criteria for selecting drought tolerant clones and reducing irrigation costs. (ORNL) ($4,450)	harvesting systems. (Supports a portion of CCAP) (ORNL) ($6,339)
	Aquatic Crops: Continue the ongoing use of biotechnology to develop microalgae with high lipid oil yields by conducting research to accomplish genetic transformations, to stabilize genetic expression, and to permit cloning of the genes responsible for lipid production. Working with ER, leverage funding to apply biotechnology to microalgae and higher plants for increased lipid production. ($790)	Aquatic Crops: Continue efforts to develop microalgae using biotechnology with the focus on refining techniques that have been developed to achieve genetic transformations of microalgae. Clone selectable genetic markers and use to test effectiveness of transformation techniques and ability of microalgae to express transformation. Introduce key gene into microalgae. Modify key gene to determine the controlling region responsible for expression or activity leading to oil production. ($500)	Aquatic Crops: Research efforts to produce genetically engineered microalgae with enhanced oil production capabilities will continue. Although modestly funded, efforts to date have been quite successful with the cloning of a key gene responsible for lipid production in microalgae and the first successful transfer of a foreign gene into a salt water microalgae species. Complementary genetic engineering strategies will be developed, involving other genes and approaches to increase lipid production in order to reduce technical risks. Efforts continue to identify opportunities to transfer the technology developed in this activity to industry. (NREL) ($500)
	$5,753	$4,950	$6,839
Biochemical Conversion	Introduction: Ethanol research is progressing from the laboratory scale to highly instrumental, fully integrated PDU scale requiring large-scale processing equipment and ancillary hardware. Industrial interest in cost sharing the development of renewable alternative fuels, which was practically nonexistent in this program three years ago, now exceeds the program's ability to participate. This includes support for additional CRADAs with industry, as well as industry projects in the Alternative Fuels User Test Facility. The existing commercial grain-to-ethanol process can be	Introduction: Industry collaboration on scale-up activities is increasing and the program is pursuing a two-pronged strategy to address near- and long-term market opportunities. Near-term R&D targets the conversion of low-cost feedstocks ($10/ton or less), such as agricultural wastes and wastepaper, to produce ethanol under $0.95/gallon. Such low-cost feedstocks provide an opportunity for ethanol from lignocellulosic biomass to gain near-term entry into the market place. Two CRADAs are currently in place based on low-cost feedstocks, Amoco and New Energy Company of Indiana. Both are candidates for continued scale-up work	Introduction: This activity is designed to take advantage of near term market opportunities by targeting the use low-cost lignocellulosic feedstocks ($10.00 or less/ton), such as agriculture wastes and wastepaper to produce ethanol for less than $0.95/gallon. It involves forming partnerships with companies and company consortia such as those under CRADAs and near term, cost-shared ethanol/power projects that developed business plans in Fiscal Years 1994 and 1995 under the Letter of Interest (RCA-3-13326), titled "Economic Development through Biomass Systems Integration." These partnerships

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biochemical Conversion (Cont'd)	improved by using the expertise and technologies previously developed in the Biomass Fuels program. This expertise can help develop improved enzymes and organisms, as well as improved unit operations. The knowledge gained through this interaction with the grain-to-ethanol industry has significant benefit to the overall Biomass Fuels program. Much of this work is done through CRADAs and addresses the concerns of industry as well as actions proposed in the Energy Policy Act (EPACT Section 1202(b)). The existing grain-to-ethanol industry is keenly interested in developing a partnership with the DOE Biomass Fuels program to develop technology that significantly lowers the cost of ethanol production. Research continues on those processing steps identified by technical and economic analyses to be most fruitful in lowering the cost of biomass-derived ethanol. ($0)	leading to commercial introduction. Long-term research targets lower cost technology using dedicated energy crops at $40/ton or less to produce ethanol below the $0.70/gallon goal set by EPACT. Herbaceous energy crops are expected to provide the first source of dedicated feedstock supply. The ethanol produced with near-term technologies will compete in the low-RVP oxygenate market as ETBE. Mid-to long-term ethanol produced under $0.70/gallon will be used as a neat fuel (e.g., E-85 in internal combustion engines or E-100 in diesel, gas turbine or fuel cell applications). Bench-scale research continues to improve biocatalysts, optimize reactor designs and operating strategies for each process step, and integrate the process steps into an integrated pilot unit. During FY 1995 the long-term component of the plan is aimed at creating advanced pretreatment systems, biocatalysts, and product recovery operations. This research will proceed through bench-scale unit operation research, integrated bench-scale testing, to be ready for scale-up in the first half of 2000. ($0)	should lead to the deployment of waste-to-ethanol technology by the year 1998. The near-term approach will be strongly supported by a longer-term approach to conduct scientific research and technology development to improve efficiency and costs of ethanol production from these feedstocks as defined by industry, and to conduct cost-shared demonstration scale projects that will lead to larger scale deployment of ethanol from energy crop systems. Long-term research targets lower cost technology using dedicated energy crops at $40/ton or less to produce ethanol below the $0.70/gallon goal set by EPACT. The ethanol produced with near-term technologies will compete with the low-RVP oxygenate market as ETBE. Mid- to long-term ethanol produced under $0.70/gallon will be used as a neat fuel (e.g., E-85 in internal combustion engines or E-100 in diesel, gas turbines, or fuel cell applications). The integrated pilot unit will be used extensively to confirm bench scale results at processing rates suitable for scale up to larger demonstration size units. ($0)
	Continued to assist Consortium for Plant Biotechnology (CPB) program managers to ensure that DOE biofuels interests are supported in evaluating proposals and projects. (CPB) ($2,000)	Continue supporting cooperative agreement with the Consortium for Plant Biotechnology. The Consortium funds cost-shared projects with industry and universities on both feedstock and bioconversion research with a near-term focus. (CPB) ($1,000)	Continue to support cooperative agreement with the Consortium for Plant Biotechnology. The Consortium funds cost-shared projects with industry and universities on both feedstock and bioconversion research with a near-term focus. (CPB) ($1,000)

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biochemical Conversion (Cont'd)	SCIENTIFIC RESEARCH AND TECHNOLOGY DEVELOPMENT: Continue to focus pretreatment efforts on scaling up a dilute sulfuric acid catalyst process. Continue to improve enzyme production and quality with a major enzyme manufacturer. Improve cellulase producing organisms by determining nutrient requirements, potential inhibitory effects, and alternative carbon sources. Genetically engineer improved cellulase-producing bacteria and develop improved reactor operation with cell retention/recycle for optimal cellulase production. Pentose sugars conversion work examines the biochemical fundamentals and kinetic models and continues to improve pentose-fermenting organisms. Continue investigation of continuous xylose conversion and continuous SSF process. Evaluate and develop techniques prerequisite to creating organisms for improving xylose fermentation. (NREL) ($10,200)	SCIENTIFIC RESEARCH AND TECHNOLOGY DEVELOPMENT: Direct pretreatment efforts to investigate at the bench scale alternative pretreatment processes to dilute acid that have the potential to reduce materials of construction costs and generation of by-products that may be deleterious to downstream fermentation steps. Continue to improve enzyme production through efforts to reduce costs and improve effectiveness on the selected feedstocks. Improvements in organisms will be sought through adaptation and mutation of existing fungi as well as genetic engineering of bacterial systems. Bacterial systems will be optimized to produce the proper mix of cellulases which will directly relate to feedstocks chosen for further study. Work with enzyme manufacturers to produce lowest cost optimum enzyme "cocktail." Continue efforts to increase pentose fermentation yields by creating organisms with improved characteristics such as high ethanol tolerance, thermotolerance product specificity, resistance to pretreatment by-products, and ability to ferment C5 and C6 sugars. (NREL) ($7,000)	SCIENTIFIC RESEARCH AND TECHNOLOGY DEVELOPMENT: Pretreatment, cellulose hydrolysis, and sugar fermentations have been identified by engineering and economic analyses as the remaining critical areas that offer significant cost reductions. Promising pretreatment methods that increase ethanol production by effectively making the cellulose fraction more amenable to enzymatic hydrolysis to sugar processes have been identified. In FY 1996, the most promising pretreatment method will be tested and optimized at the laboratory and bench scale using the agriculture or forestry waste products specified by industry cooperators. At the bench scale level, "optimized" pretreated material will undergo in-depth hydrolysis and Simultaneous Saccharification and Fermentation tests. Improvements in efficiency and lowered costs of the biocatalysts required to hydrolyze cellulose to sugar continue to be critical. Therefore, work will continue to genetically engineer organisms capable of producing sufficient quantities of highly active enzymes. Improvements in the fermentation of five-carbon sugars and the development of organisms capable of simultaneously fermenting five- and six-carbon sugars as well as determining the requirements for their use in large scale processes will continue. All technical improvements in pretreatment, hydrolysis, and fermentations will enter fully integrated process testing at the bench scale and pilot scale to determine the total combined impact on the overall process and economics of ethanol production. (NREL) ($8,060)

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biochemical Conversion (Cont'd)	ENGINEERING RESEARCH: Begin the debugging, operation and modification of the initial 1-ton/day PDU for validating technical and economic projections in preparation for the scaled-up EDU and in support of the commercial application of the technology. Use and refine the mathematical model for advanced conversion technology to evaluate SSF reactor designs and to optimize system performance. Continue analytical support to the ethanol production process. Assess available and developing lignocellulosic feedstocks for selection of the best candidates for ethanol production. This includes chemical composition changes as a function of season/harvest/storage, pretreatment requirements, and characteristics of the feedstocks. Establish additional cost-shared industrial partnership(s) to pursue near-term market opportunities to use readily available feedstocks, such as urban waste paper, waste wood, pulp mill wastes, and corn waste. Examine high-value co-products development to assist early market penetration of the ethanol process by added profitability and improved cost competitiveness in the marketplace. (NREL) ($13,702)	ENGINEERING RESEARCH: Continue operation and modification of the initial 1-ton/day PDU for validating technical design and economic projections in preparation for the scale-up engineering development unit (EDU). Complete detailed engineering designs and install "seed" fermentors to permit on-site production of enzymes. Replace temporary with permanent PDU staff in accordance with the PDU staffing plan. Continue to optimize performance of each process step by developing fermentor designs and operating strategies that minimize operating costs and maximize yields and productivities. Continue to refine mathematical models based on this research to help optimize performance and to guide design and operation of the bench-scale pilot unit and the larger PDU. Continue supporting analytical research including environment, infrastructure, plant siting, and feedstock quality and supply in collaboration with the DOE regional program, USDA, EPA, and other important stakeholders. Continue developing processes for low-cost feedstocks. Expand the corn-related work to include the use of corn residues for ethanol production. Test processes for these feedstocks at the PDU scale. Identify opportunities for future deployment of biomass-to-ethanol conversion in cooperation with industry and municipalities. Evaluate and select from business plans provided by consortia of industry firms and municipalities and support feasibility studies for future demonstration/small-commercial size ethanol plants. (NREL) ($15,044)	ENGINEERING AND DEPLOYMENT: Complete runs on the bench scale integration unit in accordance with industry partners' plans for process development studies. Concentrate on further optimization of promising operating strategies identified as a result of FY 1995 test runs of the 1-ton/day Process Development Unit (PDU) using waste feedstocks provided by industry partners. Install "kill" tanks to permit the use of recombinant organisms. Compile scale-up criteria of pretreatment equipment and fermentors for use in the design of the larger Engineering Demonstration Units (EDU) by industry partners. Modify mathematical process models as more definitive PDU results become available and begin using the models to establish desirable EDU design boundaries. Continue supporting analytical research relating to environment, infrastructure, plant siting, and feedstock quality and supply in collaboration with the DOE regional program, EPA, and other important stakeholders. Continue developing processes for low-cost feedstocks. Continue PDU test runs using corn residues, building on prior bench-scale research results. Establish additional industry partnerships for commercialization of waste-to-ethanol processes. In collaboration with the Office of Utility Technologies, cost share with industry to build a coproduction pilot plant to produce ethanol and electricity. The plant will process 250 tons/day of feedstock to produce 7 MGPY ethanol and 7 mw electric. (NREL) ($14,818)

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biochemical Conversion (Cont'd)			
	$25,902	$23,044	$23,878
Thermochemical Conversion	Introduction: The program mission is to develop and facilitate the commercialization of cost effective, safe, and environmentally sound technologies for producing transportation fuels. Near-term efforts are focused on methanol and oxygenated fuel additives. In addition, an evaluation of process options to identify products or a family of is ongoing to determine economic viability, market opportunity, and refining industry interest. This program benefits from the Utility sector Biomass Systems program scale-up activities and the Advanced Coal R&D program. ($0)	Introduction: Two biomass thermochemical conversion technologies are being developed. The biomass gasification process followed by gas conditioning produces a biosyngas which is suitable for alcohols and hydrocarbon fuels synthesis. Focus is on methanol synthesis. The other process is biomass pyrolysis which produces a biocrude. This biocrude could be further refined for petroleum refining process streams. It could also be reformed to produce hydrogen. Biocrude is presently being processed to produce olefins for reformulated gasoline additives. These products are sulfur free, giving them added value over their fossil-derived counterparts. ($0)	Introduction: Based on the results of product viability and market opportunity evaluations, the program will pursue partnerships and collaboration agreements with industry to jointly develop and scale up the most promising thermochemical process routes. The recently approved EPA Renewable Oxygenated Standard provides an excellent opportunity to commercialize biomass to methanol processes. Renewable methanol for MTBE production maybe advantageous to the refining industry. These efforts are being coordinated with the Pittsburgh Energy Technology Center to leverage our funding and take advantage of the commonalities with the Advanced Coal R&D program. ($0)
	Continue gasification studies to produce synthesis gas. Complete hot gas conditioning experiments at the process development unit scale. Continue development of hot gas conditioning catalysts. Complete design on the gas conditioning module for the EDU. Initiate techoeconomic screening evaluation of thermochemical processes. (NREL) ($1,825)	Continue gasification studies to produce clean optimum synthesis gas. Continue development of hot gas conditioning catalyst. Initiate collaboration with PETC. (NREL) ($1,000)	Complete gasification and hot gas catalytic conditioning evaluation. Continue evaluation of synthesis technology. Pursue cooperative agreement with industrial partner for technology demonstration. Continue collaboration with PETC. (NREL) ($1,958)
	No Activities. ($0)	Evaluate economics of most promising biomass syngas to fuel process technologies. (NREL) ($300)	Continue technoeconomic evaluations of most promising thermochemical conversion processes. (NREL) ($200)

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Thermochemical Conversion (Cont'd)	Complete and maintain ES&H protocols for operations of gasifiers, syngas conditioning units, and pyrolysis unit. Initiate comprehensive characterization of process waste streams. (NREL) ($250)	Assess implications of process waste characterization results and incorporate process design changes to minimize or eliminate waste. (NREL) ($300)	Continue pollution prevention and ES&H activities. (NREL) ($200)
	Continue process development on conversion of refuse derived fuel (RDF) to olefins for reformulated gasoline additives. Olefins are precursors of the ethers MTBE and ETBE which serve as oxygenated additives for reformulated fuels. Complete preliminary design of the EDU scale unit. Continue catalyst development work to optimize the RDF conversion process to olefins. Define optimum RDF composition for olefin production. Continue industry cost-shared work on systems development to produce oxygenates in a 35 tpd unit. (NREL) ($3,175)	Continue the development of the RDF to olefins thermochemical process for reformulated gasoline components (mainly ETBE and MTBE). Initiate cost-shared collaborations to integrate and optimize the ethers conversion process. Continue industry cost-shared work to advance the biomass to ethers process. Initiate laboratory screening of oil rich crops with the potential for olefin production. (NREL) ($2,100)	Continue the development of catalysts to meet performance goals of 60 percent yields. Complete the integration of the process development unit. Continue screening of oil rich crops. Pursue cooperative agreement with industrial partner for technology demonstration. (NREL) ($2,600)
	Conduct feasibility study on biodiesel unit for demonstration purposes. (NREL) ($350)	Cost-share commercial demonstration of plant oils and/or animal fats to biodiesel. (NREL) ($500)	Continue work to assist industry in demonstrating the feasibility of producing biodiesel from a wide range of sources of oil with widely ranging characteristics, including plant oils, animal fats, and waste oils. The most important aspect of the oils to be studied is the effect of free fatty acid content on processing. The work will be jointly funded with industry, and potential joint funding with USDA. (NREL) ($500)
	$5,600	$4,200	$5,458

III. Biofuels Energy Systems (Cont'd):
Transportation Sector - Biomass Fuels (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Purchase and install equipment for user facility (PDU) modifications. Purchase general purpose equipment and laboratory apparatus to upgrade biofuels production and conversion facilities. Design and equip laboratories in the user facility for ethanol research with CRADA partners. (ORNL, NREL) ($2,911)	Purchase and install equipment for additional user facility (PDU) modifications. Purchase general purpose equipment and laboratory apparatus to upgrade biofuels production and conversion facilities. Design and equip laboratories in the user facility for ethanol research with CRADA partners. (ORNL, NREL) ($2,809)	Purchase and install additional equipment to modify process development unit and laboratory equipment at the user facility. Purchase general purpose equipment and laboratory apparatus to upgrade biofuels production and conversion facilities. (ORNL, NREL) ($1,984)
	$2,911	$2,809	$1,984
Subtotal, Transportation Sector - Biomass Fuels	$40,166	$35,003	$38,159
Technical and Financial Assistance			
Regional Biomass Program	Maintain biomass information contacts in continental U.S.; promote state-of-the-art biomass energy through the transfer of biomass technology; continue to provide technical assistance tailored to States and continue projects geared toward establishing the availability of biomass resources within the various regions through resource assessment studies; encouraged cooperation between industry and DOE through cost-shared projects. (NREL) ($4,230)	Maintain biomass information contacts in continental U.S. Conduct resource assessment studies to update information on the availability of biomass resources within the various regions. Support State grant programs in selected States, to provide specific information based on verified and consistent data on a range of renewable biofuels technologies, through a coordinated cost-shared effort. Pursue collaborative interagency agreement with EPA and USDA (SCS) to develop coordinated research and technology development to improve cost effectiveness and operation of methane recovery technologies on farms. (NREL) ($4,809)	Maintain biomass information contacts in continental U.S. Conduct resource assessment studies to update information on the availability of biomass resources within the various regions. Support State grant programs in selected States, to provide specific information based on verified and consistent data on a range of renewable biofuels technologies (e.g., biodiesel, coal/biomass co-firing), through a coordinated cost-shared effort. Continue collaborative interagency efforts with EPA and USDA (SCS) to develop coordinated research and technology development and deployment demonstrations to improve cost effectiveness and operation of methane recovery technologies on farms. (NREL) ($3,940)

III. Biofuels Energy Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Regional Biomass Program (Cont'd)	$4,230	$4,809	$3,940
Subtotal, Technical and Financial Assistance	$4,230	$4,809	$3,940
Biofuels Energy Systems	$55,830	$59,643	$80,380

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Wind Energy Systems

Wind energy in the U.S. has made significant progress in recent years, and is moving toward broad use as a fossil-fuel alternative. A decade of operating wind turbines on the wind-swept ridges and mountains of California has shown wind energy to be a promising technology. The 1600 MW of installed wind capacity provides a base of experience needed to demonstrate the performance of wind energy as a generating source for the bulk-power market. In 1993, wind energy generated 3.0 billion kilowatt hours, about 2 percent of California's total requirements. The California experience has shown that integration into the utility mix is achievable. New installations are using wind turbines in the 300-500 kW per unit range, reflecting a trend toward larger machines. As wind turbine manufacturers, wind plant developers, and operators work to make wind a viable technology, costs have fallen. The technology has developed to the point where machines being installed today can produce electricity for 5.5 to 7 cents per kWh at sites with moderate wind speeds (13 mph), rivaling many non-renewable sources. As a result, the Wind Program envisions that industry's goal of 10,000 MW of wind energy on line by 2000 and 50,000 MW by 2010 can be realized. With regards to the exports of products, support from the Wind Program will help the U.S. industry capture half of the overseas wind turbine market, projected to be 1,500 MW per year by 2000. The current U.S. share is 10-20%.

Electric utilities are showing more interest in wind generation because of improved technology and the potential for environmental emissions reductions. However, the barriers to adoption of a new technology are significant due to the lack of an established infrastructure for manufacturing, installation and servicing. Thus, the Wind Program has developed a strategy, that combines Federal resources with those of other stakeholders, to accelerate the widespread development and commercialization of wind technology, while achieving national objectives including increased economic development, and reduced greenhouse gas emissions. Core research activities will continue, at the National laboratories and selected universities, to develop improved tools and models that will help improve turbine performance, increase confidence in designs, and reduce the costs of energy by 20 percent. The National Wind Technology Center will be an internationally recognized center of excellence and will provide a competitive advantage to U.S. industry. The development of technologically advanced, higher efficiency wind turbines will continue to be one of the highest priority activities of the DOE Wind Program, as well as the U.S. wind industry. The cost-shared (50 percent target) Turbine Development program will provide, by the end of the decade, innovative next-generation utility-grade wind turbines that generate electricity at less than 4 cents per kWh in moderate winds, and will enable U.S. manufacturers to compete on a broad geographic basis, both domestically and internationally. In support of the Energy Policy Act and the Climate Change Action Plan, the second phase of wind commercialization activities, under the recently organized wind market mobilization collaborative, will undertake the deployment of two highly leveraged 25-50 MW windfarm projects, expanded avian research, and utility wind characterization projects. These actions represent a major step toward bolstering utility confidence in the reliability and cost effectiveness of wind energy as an electric supply option, and by helping to build an industry infrastructure. Also, the successful and highly leveraged Turbine Verification Program will be opened to independent power producers, and competitively selected projects increased in size. The first round of this joint government/utility program has resulted in the selection of two host utilities, Central and Southwest Corp. and Green Mountain Power, for the installation of at least 14 MW of wind power. This program provides a bridge between turbine development projects currently underway and commercial purchases, while also supporting the development of a domestic manufacturing infrastructure. As a result of DOE-supported programs with stakeholders, 3,000 MW of direct and leveraged installed capacity will be added by 2000.

II. A. Summary Table: Wind Energy Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Applied Research	$ 5,550	$ 7,000	$ 8,900	$ 1,900
Utility and Industry Programs	19,817	39,139	39,431	292
Capital Equipment	3,784	1,000	1,489	489
Subtotal, Utility Sector	$ 29,151	$ 47,139	$ 49,820	$ 2,681
Total, Wind Energy Systems	$ 29,151	$ 47,139	$ 49,820	$ 2,681

II. B. Laboratory and Facility Funding Table: Wind Energy Systems

National Renewable Energy Lab	$ 22,100	$ 31,492	$ 41,050	$ 9,558
Pacific Northwest Lab	750	300	0	-300
Sandia National Laboratories	2,450	3,180	3,150	-30
All Other	3,851	12,167	5,620	-6,547
Total, Wind Energy Systems	$ 29,151	$ 47,139	$ 49,820	$ 2,681

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Wind Energy Systems			
Utility Sector			
Applied Research	Develop more accurate aerodynamic models for industry's use by incorporating improvements in both steady-state post-stall theory and dynamic stall theory for three-dimensional blade effects, yawed flow effects, and turbulence. Unsteady aerodynamics testing using NREL developed airfoils will be used to validate new stall models and to quantify effects on rotor performance. Improved prediction of effects of turbulence and the behavior of rotors in the post-stall region, leading to turbine overspeed and fatigue failures, will have major economic and reliability benefits to the industry, including lighter, less-costly turbines and significant improvements in energy capture and operational availability. (NREL, SNL) ($1,120)	Initiate blade pressure measurements of a small test turbine in a wind tunnel to illustrate the steady flow inflow effects of unsteady, three-dimensional wind turbine aerodynamics. This effort will complement previous atmospheric tests of a similar turbine and assist in developing more realistic computer models of delayed stall and three dimensional aerodynamics.. Recent advances in model-generation capabilities for computational fluid dynamic codes will be used to model the time-dependent flow around wind turbine blades. Enhance aerodynamic models to allow analysis of variable-speed, tetered rotor with aerodynamic braking, which are configurations expected to be popular in the mid to late 1990s. (NREL, SNL) ($1,300)	Conduct wind tunnel tests of highly instrumented rotors with pressure instrumentation to measure unsteady aerodynamic loading due to stall, skewed inflow, tower shadow and control action. Tests will also be conducted to help reduce noise caused by blade interaction with tower shadow and tip vortex shedding. Quiet blade geometrics, tip shapes, and the effect of blade twist on aerodynamic stall will also be investigated. Evaluate wake and array data from wind farm operators using computational fluid dynamics techniques. (NREL, SNL) ($1,500)
	Continue activity to collect and analyze turbulence data at competitively selected new sites which have different wind characteristics. Existing models of wind shear and single-component turbulence fail to accurately represent measured characteristics in operating wind farms. Develop and test a predictor measurement and model system for mesoscale disturbances, which will allow turbine operators to better predict wind energy intermittency. (PNL, NREL) ($1,000)	Analyze turbulence data collected in FY 1994 at prospective wind farm locations in the Great Plains to assist designers in projecting the likely stress and fatigue loading of turbines, and extend data collection to sites with more varied terrain configurations. Continue wind forecasting activities with emphasis on mesoscale forecasting relevant to wind farms in the Great Plains or the Northeast. (PNL, NREL) ($1,200)	Develop models of the turbulent mixing between the micro-scale and macro-scale flow, through and around windfarm arrays. These models will help developers design energy efficient array configurations which result in lower structural loads on the wind turbines. Sonic direction and ranging devices using doppler measurement techniques will be installed at selected sites in the Great Plains. These units will provide continuous measurements of three-dimensional wind flow profiles and estimates of turbulence structures in the atmosphere. Initiate development of wind forecasting tools to address utility concerns over wind

III. Wind Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Applied Research (Cont'd)			intermittancy effects on system operation. (NREL) ($1,500)
	Continue efforts to develop new design tools capable of modeling all components (tower, nacelle, drive train, rotor, and controls) of a wind turbine for transient conditions, complex inflow, and unsteady aerodynamics. Prediction of structural performance is the key bridge, connecting loads caused by incoming turbulent winds and operation/control actions to structural stresses that impact component fatigue life. Structural failures in wind turbines are a result of complex inflow, unsteady aerodynamics, and the system dynamic interactions, which result from these unusual conditions. Design tools currently available to industry do not predict overall system dynamic loads. (NREL, SNL) ($1,780)	Analyze structural dynamics data collected at industry and DOE sites to validate ongoing advanced model development activities in support of the Advanced Wind Turbine Program. Undertake, with industry, structural modal tests to validate design parameters against as-built turbine configurations. Investigate active and passive damping methods to reduce peak stress on key components. Continue to transfer Government developed computer codes, models and databases to industry. (NREL, SNL) ($900)	Improve analytical structural codes to accurately model aerodynamic forces developed by advanced aerodynamic controls. Integrate advanced control algorithms into system dynamics models to investigate the use of active controls in reducing dynamic response. Advanced composite materials allow turbine blades to passively relieve wind gust loading. Detailed modeling of these complex elastic structures and their interaction with aerodynamic loading will be implemented. Improved design codes are essential for designers to predict and control dynamic loads leading to low cost advanced wind turbines. (NREL, SNL) ($1,200)
	Develop an empirical basis for predicting wind turbine failure strength, fatigue life, and structural properties using the capabilities of the NREL Fatigue Testing Facility. Fatigue research will investigate the relationships between coupon material life properties and the fatigue life experienced on sub-system and full-scale components. Projects (50/50 cost-share target) with industry will accelerate the process by providing needed data on industry blade designs. These efforts will significantly increase industry's knowledge in fiberglass composite blades with bonded joints, which represent about 80 percent of U.S. installed turbines. Develop analytical	Fiberglass composite blades with bonded joints have shown to be a major failure source in the industry. Continue laboratory and field experiments on typical U.S. blade joint designs and blade adhesives. Initiate development of a high speed blade joint testing capability to expedite validation of advanced designs. Extend the database of relevant composite materials properties and distribute data to industry. Continue analysis of wind turbine performance in the field through application of a generalized fatigue computer model easily applied by wind turbine manufacturers, operators and potential purchasers. (NREL, SNL) ($1,100)	Enhance fatigue damage prediction methods to accurately simulate microscopic failure mechanisms from new fatigue tolerant materials and joints. Develop fatigue-life simulations to estimate statistically extreme loads and accurate full-life load spectra. Advanced composite materials, which have enhanced damping properties and favorable elastically-tailored properties, will be developed. Continue to refine tools for the analysis of the uncertainty in the design process by applying structural reliability procedures and system reliability capabilities to wind turbine components and their environments. (SNL, NREL) ($800)

III. Wind Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Applied Research (Cont'd)	design tools that assess system reliability and identify important parameters for system performance enhancements and economic forecasting. (NREL, SNL, KENETECH) ($1,650)		
	Activity included under Utility and Industry Programs. ($0)	Undertake development of new airfoils and blades, including special consideration for variable rotor speed configurations, which are expected to be needed by industry in the mid to late 1990s. Continue investigation of aerodynamic control devices such as flaps and ailerons which have the potential to provide desired control at significantly lower cost than conventional techniques such as tip brakes. Advanced wind turbine control strategies using adaptive controls and expert systems will be developed to reduce fatigue damage and optimize economic performance. A new advanced research turbine will be erected at the National Wind Technology Center to provide a research basis for innovative concepts expected to be incorporated on advanced turbine technology. The research turbine will have the capability of evaluating high priority concepts and components, such as variable-rotor-speed configurations, and new compliant structural systems to reduce loads. (NREL) ($2,500)	Continue the multi-year effort started in FY 1995 to develop new advanced airfoils and blades to replace imported foreign blades for machines in the 250-300 kilowatt size range. Development and testing of trailing-edge aerodynamic brakes for overspeed protection will continue with atmospheric field tests on the new advanced research testbed at the National Wind Technology Center. Continue development of advanced control systems that incorporate adaptive controls and expert systems for both individual turbines and supervisory control systems for windfarms. Increase involvement of university research organizations to enlarge the base of scientific and technical knowledge and enhance the development of highly qualified scientific and engineering personnel to meet future needs of the wind industry. (NREL, SNL) ($3,900)
	$5,550	$7,000	$8,900

III. Wind Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Utility and Industry Programs	Continue development of near-term prototype wind turbines under the Turbine Development Program to enhance cost-effectiveness and reliablility, and to reduce financial and technical risks. (NREL, Lynette, Atlantic Orient, Northern Power) ($2,000)	Continue field testing of near-term prototype wind turbines to reduce perceived technical and financial risks by utilities and public utility commissions. (NREL, Lynette, Atlantic Orient, Northern Power) ($3,000)	Complete field testing of advanced prototype wind turbines targeted for the near-term with prior year funds. ($0)
	Develop with industry, under a continuing multi-year development program, innovative next-generation advanced wind turbines. Multiple cost-shared contracts (50/50 cost-share target) will result in utility-grade wind turbines that are a major departure from current technology and are targeted at producing electricity at $0.04/kWh or less at 13 mph average wind sites by 2000. Innovative designs will move wind technology to a new competitive level with conventional technologies and open broad new areas of the country to production of electricity with wind power. Collaborative efforts will increase industry stability and competitiveness in international markets and promote the formation of utility/wind industry alliances. (NREL, TBD) ($9,550)	Support the U.S. industry to explore new concepts and apply cutting edge technology for the development of next-generation, innovative, utility-grade wind turbines, under the continuing cost-shared, multi-year Turbine Development Program. Design, fabrication, and testing activities will help industry integrate technology innovations into a new class of wind turbine targeted directly for domestic and international utility markets. Resulting prototype-commercial machines will help attract utility participation in the use of wind energy, increase regional diversification, and increase confidence in turbine designs. Innovations will enhance performance, efficiency, and reliability of commercial utility-grade wind turbines. (NREL, SNL, TBD) ($11,810)	Continue cost-shared, multi-year Turbine Development activities that support new concepts and apply cutting edge technology towards the development of next-generation, innovative, utility-grade wind turbines that can compete with conventional electric generation. Innovations will enhance performance, efficiency, and reliability and support cost goals of $0.04/kWh or less at moderate wind regimes in the 1998-2000 timeframe. Field tests will be completed on turbine components and subsystems, developed under the Turbine Development Program and intended for use on existing and new wind turbines. Full system next-generation development contracts will continue with industry partners. (NREL, SNL, TBD) ($16,600)
	Develop advanced airfoils resulting in better-performing blades for the replacement blade market as well as future advanced wind turbines. Develop airfoil families for larger utility-scale, stall-regulated, variable-pitch, and variable-speed rotors. Develop blades having superior structural designs, high quality control, and greater energy output. Develop advanced control strategies that maximize energy capture commensurate with reduced loads and increased system reliability. Current	Follow on activities are funded under the applied research program. ($0)	Follow on activities are funded under the applied research program. ($0)

III. Wind Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Utility and Industry Programs (Cont'd)	control strategies do not take into account such factors as wake effects from upstream turbines and that different turbine sites can have different wind regimes. (NREL) ($1,253)		
	Conduct a joint research effort with one or more utilities to study grid integration issues for their specific utility system. Continue system modeling activities to recognize and find solutions for electrical and mechanical problems which arise when one or more wind turbines are interconnected to a grid. Continue to develop a better understanding of the control characteristics and component behavior of wind-hybrid systems to assist industry in designing and packaging such power systems. Improve the understanding of the cost, performance, and environmental implications of wind energy in major markets; assure that information and tools are available to expedite decisions by key stakeholders. Support U.S. industry by providing information on resource data, institutional barriers, and sources for additional information to users of wind turbines. Continue to upgrade existing industry consensus standards to reflect the increased sophistication of wind energy products and services and to conform to International Electro- Technical Commission standards used throughout the world. Conduct avian research studies in cooperation with private industry. Support industry- driven testing at the National Wind Technology Center at Rocky Flats. (NREL, TBD) ($4,014)	Continue utility system modeling and distributed wind generation activities to identify user requirements for wind deployment and to support Utility Wind Interest Group activities that will communicate customer requirements to the Wind Program and progress to principal stakeholders. Support industry in pursuit of markets such as wind/diesel hybrids, and support stakeholders interested in wind deployments in domestic and international markets. In particular, assist the American Wind Energy Association in technical and institutional requirements in targeted markets such as Mexico. Support industry in development of domestic and international consensus standards. Encourage use of user facilities at the National Wind Technology Center by the wind industry and other participants. These research and user facilities are expected to lead to the creation of a significant number of jobs at the Rocky Flats site. (NREL, TBD) ($6,820)	Perform cooperative research efforts with utilities to enhance the value and contribution of wind energy. Continue utility system modeling activities that provide requirements to the Wind Program. Support industry's efforts to provide standards, recommended practices, guidebooks, and information products needed to enable customers to make informed decisions regarding wind energy development. Support industry's need for certification type testing at the National Wind Technology Center. Efforts will ensure U.S. manufactured equipment is not denied entry into foreign markets. Provide the use of the new Industrial User Facility for cooperative research to assist industry, solve operational problems, and enhance current products. Support industry with technical assistance in targeted international markets such as Mexico, Brazil, and Indonesia. (NREL,TBD) ($6,331)

III. Wind Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Utility and Industry Programs (Cont'd)	Promote a Utility- DOE Initiative by accelerating initial market entry of advanced wind turbine technology into regional markets through cost-shared (DOE (15%) and EPRI, host utilities, and vendors (85%)) performance validation testing of U.S.-manufactured advanced wind turbines. Under a DOE/EPRI cooperative arrangement, commercial-prototype wind turbines will be deployed and evaluated in typical utility operating environments. Collaboration will provide a bridge between machine development programs and commercial purchases, and increase utility acceptance and participation of advanced wind technology by accelerating adoption by three- to five-years and enhancing entry into new markets. (EPRI, NREL) ($3,000)	Conduct highly leveraged utility wind turbine verification projects under the continuing, multi-year collaborative program between DOE and EPRI. Wind plants will be deployed and evaluated with competitively selected utilities under a utility-driven commercialization program. Projects will provide statistically valid performance, operation and maintenance experience with utility-grade advanced wind turbines. Efforts will result in broadened utility experience and acceptance and the accelerated adoption of wind energy. (EPRI, NREL) ($4,000)	CLIMATE CHANGE ACTION PLAN: (Market Mobilization:) Enhance the successful highly leveraged, multi-year Turbine Verification Program under the Climate Change Action Plan. Projects will be opened to independent power producers and increased in size. Competitively selected utilities working with the program will evaluate prototype advanced wind turbines in diverse areas of the country under typical utility operating environments. Efforts will provide a bridge between machine development programs currently underway and commercial purchases, and support the development of a domestic manufacturing infrastructure. (CCAP #26 = $4,000) (NREL) ($4,000)
	No Activities. ($0)	CLIMATE CHANGE ACTION PLAN: (MARKET MOBILIZATION:) Initiate a cost-shared market mobilization collaborative to support global warming mitigation and technology commercialization. Utility partners will be solicited for four highly-leveraged 25-MW windfarm projects that will accelerate deployment of wind energy as an effective option to reduce emissions of greenhouse gases from electric power generation. Recent experience has shown that new windfarms can be deployed in two years or less, and thus will result in visible evidence of the capability of wind energy to impact global climate issues in the near-term. (CCAP #26=$13,509) (NREL, TBD) ($13,509)	CLIMATE CHANGE ACTION PLAN: (MARKET MOBILIZATION:) Under the Climate Change Action Plan initiate the second phase of wind commercialization activities under a recently organized wind market mobilization collaborative designed to facilitate deployment of wind energy in all regions of the country. A range of activities will be undertaken as identified by the voluntary collaboration of key stakeholders. Activities will include the competitive selection of utility partners for two highly leveraged 25-50 MW windfarm projects, avian research and utility wind characterization. (CCAP #26 = $12,500) (NREL) ($12,500)
	$19,817	$39,139	$39,431

III. Wind Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Acquire data collection equipment and field instrumentation in support of turbine development programs; initiate acquisition of a wind turbine testbed for NREL. (NREL) ($3,784)	Augment laboratory data collection to support industry-driven testing at the National Wind Technology Center and at industry sites. (NREL) ($1,000)	Provide laboratory and field instrumentation for the National Wind Technology Center to support research and development activities in cooperation with the wind industry and utilities. (NREL) ($1,489)
	$3,784	$1,000	$1,489
Subtotal, Utility Sector	$29,151	$47,139	$49,820
Wind Energy Systems	$29,151	$47,139	$49,820

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Ocean Energy Systems

The objective of the Ocean Energy program is to develop a generic technical data base and reduce the technical risks associated with the extraction and use of ocean-derived energy sources, thereby allowing industry to judge where and when the technology could be commercialized. DOE has supported R&D required to develop a generic set of experimentally verified predictive models for industry's use. This approach has furnished industry with a data base that can assist in the commercialization of the ocean technologies. With the completion of testing activities for the 165-kWe open-cycle Ocean Thermal Energy Conversion (OTEC) experiment, DOE will complete close-out activities. Continued support for additional activity is not proposed on the basis of cost and potential benefit as compared to other utility sector renewable technologies where commercial development can be more rapid and substantial.

II. A. Summary Table: Ocean Energy Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Thermal Conversion	$ 959	$ 0	$ 0	$ 0
Subtotal, Utility Sector	$ 959	$ 0	$ 0	$ 0
Total, Ocean Energy Systems	$ 959	$ 0	$ 0	$ 0

II. B. Laboratory and Facility Funding Table: Ocean Energy Systems

All Other	959	0	0	0
Total, Ocean Energy Systems	$ 959	$ 0	$ 0	$ 0

585

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Ocean Energy Systems			
Utility Sector			
Thermal Conversion	Continue ocean thermal energy conversion and ocean energy systems activities as provided in past fiscal years. (PICMTR) ($959)	No Activities. ($0)	No Activities. ($0)
	$959	$0	$0
Subtotal, Utility Sector	$959	$0	$0
Ocean Energy Systems	$959	$0	$0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Solar International Programs

Solar International Programs support the development of fair and competitive international markets for U.S. renewable energy (RE) technologies. Unprecedented opportunities exist for RE technologies due to changing political climates and environmental concerns. However, multiple barriers obstruct efficient export of U.S. RE technologies. These include weak institutions and markets overseas, inflexible financing mechanisms, inadequate consumer and technical information, and rising competition from the European Community and Asia. International Solar Programs can help focus U.S. RE industries' efforts to penetrate markets abroad. In addition, these programs will help U.S. industries capture a larger international market share, strengthen industries' domestic position, strengthen U.S. economic and energy productivity, create jobs, and reduce the cost of alternative energy options in the U.S.

Solar International Programs have four goals: 1) to increase exports of U.S. RE technologies; 2) to increase the number of energy market decisions based on a better understanding of the economics, environmental, and energy security benefits of RE technologies and practices; 3) to develop better and more competitive foreign markets for U.S. industries; and 4) to improve the global environment while facilitating economic development.

To achieve these goals, Solar International Programs will provide export assistance while simultaneously supporting market conditioning activities. This will help create functioning private markets for RE technologies and lead to increased exports. This strategy will be implemented through the following programs:

-- The Committee on Renewable Energy Commerce and Trade (CORECT): CORECT is an interagency group (including the Agency for International Development, the Department of Commerce, the Export-Import Bank, and the Environmental Protection Agency) which collaborates with the RE industry to (1) support cost-shared trade and economic development projects, and (2) counter intense international competition. CORECT supported activities include: preparing markets for the deployment of RE technologies through the identification and resolution of market barriers, the development of adequate infrastructures to facilitate business contacts, the development of financing mechanisms and procedures, a range of pre-feasibility and feasibility studies, and finally nurturing of specific projects to fruition. This assistance will be provided to Asia/Pacific, African, and Eastern Europe/NIS markets.

-- LDC Training: CORECT has developed and will implement training programs in conjunction with U.S. AID (EPACT, Sec. 1203) on the advantages of RE technologies, and the operation and maintenance of these technologies in countries with developing economies.

-- Americas 21st Century Program: This program, developed in accordance with CORECT's strategic plan, assists Latin American and Caribbean (LAC) countries in the deployment of RE technologies through RE cost-shared joint ventures with the LAC public and private sectors.

-- Joint Implementation efforts: Through these efforts DOE promotes U.S. leadership in Joint Implementation efforts and increases industry participation. Activities include: (1) identification of projects representing all key markets and the range of technologies, (2) technical assistance to refine methodologies for emission reductions, and monitoring and verification, (3) development of host country institutional capacity, and (4) expanded financing from multi-lateral development banks, commercial banks and private sector investors.

-- U.S. Country Studies, Phases I and II: Phase I works with 60 developing countries and countries-in-transition to further their participation in the U.N. Framework Convention on Climate Change through formulating greenhouse gas emissions inventories and developing adaptation and mitigation strategies. Phase II lays the groundwork for export opportunities by building capacity and strengthening the

I. Solar International Programs (Cont'd)

ability of countries to assess present technical conditions in the energy sector and develop appropriate responses.

The FY 1996 budget request for Solar International Programs includes continued funding for CORECT, as well as funds for expanding market penetration efforts and implementing training programs in Southeast Asia, LAC countries, Eastern Europe, and Africa; for expanding the Americas 21st Century program; for a new initiative for increasing the deployment of RE technologies in Asia/Pacific, African, and Eastern European/NIS markets; for increasing the project identification and assistance efforts of the Joint Implementation initiative, and expanding the successful country studies initiative.

International Market Development Programs and Solar International Programs together will produce the following benefits by 2010:

-- 0.6 quads of primary energy savings

-- almost $5 billion in cost savings

-- 10 MMCTE in emission reductions

PERFORMANCE INDICATORS

Several indicators will be used to measure the progress and performance of Solar International programs. These include:

-- An increase in the number of countries or their political subdivisions which have removed regulatory, legislative or business barriers to the importation and adoption of renewable energy technologies and practices

-- An increase in international sales of U.S. renewable energy products and services, with associated U.S. economic growth and increase in number of jobs, and reduced global carbon emissions

-- A 10% increase in the number of attendees at DOE-sponsored renewable energy symposia

-- A 25% increase in the number of projects sponsored

-- A 30% increase in the number of energy decision makers trained

-- A 200% increase in the number of Joint Implementation projects assisted

II. A. Summary Table: Solar International Programs

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
International Market Development				
CORECT,Americas 21st Century,EPACT 1203 LDC Training, Sustainable Dev. including Joint Implementation & Country Studies	$ 5,036	$ 9,087	$ 29,154	$ 20,067
Subtotal, International Market Development	$ 5,036	$ 9,087	$ 29,154	$ 20,067
Total, Solar International Programs	$ 5,036	$ 9,087	$ 29,154	$ 20,067

II. B. Laboratory and Facility Funding Table: Solar International Programs

Los Alamos National Laboratory	0	100	500	400
National Renewable Energy Lab	3,270	3,000	3,000	0
Oak Ridge National Lab	0	0	150	150
Pacific Northwest Lab	0	0	2,000	2,000
Sandia National Laboratories	55	0	1,500	1,500
All Other	1,711	5,987	22,004	16,017
Total, Solar International Programs	$ 5,036	$ 9,087	$ 29,154	$ 20,067

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solar International Programs			
International Market Development			
CORECT,Americas 21st Century,EPACT 1203 LOC Training, Sustainable Dev. including Joint Implementation & Country Studies	CORECT: Provide cost-shared support for U.S. renewable energy (RE) industry efforts to promote exports in high-priority markets. Develop and implement an international energy strategy to assist the RE industry with planning and deployment. Provide assistance to RE trade associations. Support trade missions, reverse trade missions, trade shows, technology demonstrations, resource assessments and technical assistance. (NREL, Sandia) ($1,923)	CORECT: Continue support for U.S. renewable energy (RE) industry efforts to promote exports in high priority markets. Continue implementing international strategy to assist the RE industry with planning and deployment. Provide assistance to RE trade associations. Support trade missions, reverse trade missions, trade shows, technology demonstrations, resource assessments and technical assistance. Coordinate efforts and develop cooperative systems, where applicable, with COEECT (Committee on Energy Efficiency Commerce and Trade). (NREL, Sandia) ($1,884)	CORECT: Support for U.S. renewable energy (RE) industry efforts to promote exports in high priority markets will be continued. The international export strategy will be further implemented in the Asia/Pacific region and will consist of, among other activities, trade missions, trade events and project identification. Continue to provide assistance to RE trade associations and support technology demonstrations, resource assessments and technical assistance. Continue to coordinate training and other activities with COEECT (Committee on Energy Efficiency Commerce and Trade) to avoid unnecessary duplication. (NREL, Sandia, LBL, ORNL, PNL) ($1,878)
	AMERICAS 21ST CENTURY: Develop and implement a program to foster joint ventures with the Latin American and Caribbean (LAC) public and private sectors to promote exports of U.S. RE technologies. RE joint ventures will be solicited within the U.S. and the LAC. This cooperative effort will assist in the expansion of both domestic and LAC RE industries, create new U.S. jobs and encourage the use of clean energy sources. (NREL, Sandia) ($3,113)	AMERICAS 21ST CENTURY: Continue program to foster leveraged joint venture activities in the Latin American and Caribbean (LAC) region. Continue efforts to assist U.S. RE industries in developing and penetrating LAC markets through cooperative efforts. Continue support for LAC RE industries. Coordinate overall activities with CORECT and COEECT, where applicable. Facilitate greater awareness of RE technologies through coordination with regional Energy Efficiency Centers. (NREL, Sandia) ($3,525)	AMERICAS 21ST CENTURY: Program will be expanded to provide additional funding for project support within the LAC (Latin American and Caribbean) countries already assisted and in countries which have not previously participated in leveraged projects. Efforts will continue to assist the U.S. RE industries in developing and penetrating LAC markets through cooperative efforts. Training and overall activities will be conducted in coordination with CORECT and COEECT as appropriate. (NREL, Sandia, PNL, LBL) ($4,985)

III. Solar International Programs (Cont'd):
International Market Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
CORECT, Americas 21st Century, EPACT 1203 LDC Training, Sustainable Dev. including Joint Implementation & Country Studies (Cont'd)	LDC TRAINING: Renewable Energy Training for LDC's to increase U.S. exports: Continue program planning in conjunction with U.S. AID, within scope of CORECT. (EPACT Section 1203) ($0)	LDC TRAINING: Renewable Energy Training for LDC's to increase U.S. exports: Initiate program implementation in conjunction with U.S. AID. (EPACT Section 1203) (NREL) ($470)	LDC TRAINING: The training program developed in conjunction with USAID in FY 1995 will be partially implemented. Training activities will be undertaken within the parameters of specific programs and through other appropriate training resources. Training will target energy decision makers in strategic markets and will include curricula directed toward energy policy and planning, operation and maintenance, as well as post-project installation infrastructure support. (LBL, NREL) ($998)
	Sustainable Development Project Demonstrations: No Activities ($0)	CLIMATE CHANGE ACTION PLAN: Sustainable Development Project Demonstrations: Develop and implement a program to catalyze project development in support of the international Joint Implementation effort in coordination with OOE's Office of Environmental Policy. Program will assist in efforts to reduce carbon emissions through demonstrations of applications of RE technologies. Support will be provided for strategic planning, project identification, project demonstrations and training, as well as analysis and credit mechanisms. (LBL, Sandia, ORNL, PNL, NREL) ($3,208)	CLIMATE CHANGE ACTION PLAN: Sustainable Development Project Demonstrations: The U.S. Initiative on Joint Implementation (USIJI) program will significantly increase project development in partnership with the private sector. Program will expand efforts to catalyze and assist projects that increase exports of U.S. technologies, cost-effectively reduce emissions of greenhouse gases, create U.S. jobs, and generate international cooperation on climate change and economic development. The USIJI Evaluation Panel will hold workshops, refine project monitoring methodologies, and evaluate project proposals in cooperation with other agencies. Program will significantly increase partnership base with private sector (industrial firms, electric utilities, trade associations, public interest groups). Program works with partner country governments to facilitate projects. Activities will coordinate with CORECT, COEECT, Americas 21st Century and other programs to maximize program benefits and avoid duplication.

III. Solar International Programs (Cont'd):
International Market Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
CORECT,Americas 21st Century,EPACT 1203 LDC Training, Sustainable Dev. including Joint Implementation & Country Studies (Cont'd)			The well-received U.S. Country Studies (Phase I) program will continue successful efforts with 60 developing countries and countries with economies in transition to formulate greenhouse gas emissions inventories and develop adaptation and mitigation plans to further their participation in the U.N Framework Convention on Climate Change. (LBL, Sandia, ORNL, PNL, NREL, LANL) ($14,576)
	No Activities. ($0)	No Activities. ($0)	NEW INITIATIVE FOR ASIA/PACIFIC, AFRICA, AND EASTERN EUROPE: A program will be implemented to address the various export assistance needs in these three regions. Project support will be provided for Secretarial initiatives in India, China and Africa. In conjunction with CORECT/COEECT, country-specific strategies will be developed and implemented to assist U.S. Industries to increase their market share in these regions. Activities will include market barrier identification and resolution, development of adequate infrastructures to support sustainable development, development of financing mechanisms and procedures, and assistance with prefeasibility and feasibility studies. (NREL, ORNL, PNL, Sandia) ($4,727)

III. Solar International Programs (Cont'd):
International Market Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
CORECT, Americas 21st Century, EPACT 1203 LOC Training, Sustainable Dev. including Joint Implementation & Country Studies (Cont'd)	No Activities. ($0)	No Activities. ($0)	U.S. Country Studies -- Phase II. This effort will lay the groundwork for technology export opportunities by intervening at critical energy infrastructure development stages in developing countries worldwide. Program will build on Country Studies Phase I to assist in strengthening the ability of countries to assess present technical conditions and develop appropriate policy responses; identify energy improvement opportunities, and develop an infrastructure which facilitates the adaptation, demonstration and deployment of U.S. technologies. (LBL, NREL, PNL) ($1,990)
	$5,036	$9,087	$29,154
Subtotal, International Market Development	$5,036	$9,087	$29,154
Solar International Programs	$5,036	$9,087	$29,154

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Solar Technology Transfer

In FY 1996, the Office of Technical and Financial Assistance (OTFA) will continue to support a coordinated program to provide information and technical assistance to individuals, small businesses, and State and local governments. This program will add value to EE's efforts to maximize the deployment and effective use of renewable energy and energy efficiency technologies. Existing State, private, and laboratory data bases on demonstrated technologies and technical information will be used to meet information requests.

OTFA currently supports several programs to assist in transferring EE technologies. The Technical Information Program (TIP) develops technical documents, displays, and videotapes to meet EE needs for technology transfer both domestically and internationally. The program works with private sector and State and local government entities to develop outreach and educational materials to promote technology transfer as well as to make laboratory technology information more accessible to potential users. The Energy Efficiency and Renewable Energy Clearinghouse (EREC, a consolidation of the former Conservation and Renewable Energy Inquiry and Referral Service (CAREIRS) and the National Appropriate Technology Assistance Service (NATAS) which is funded under the Energy Conservation Appropriation) develops and disseminates information products for quick response to written and phone requests. The services respond to both general information inquiries and specific requests for technical assistance. In FY 1996 the service will process some 1,500 requests per week and will address both renewable energy and energy efficiency information.

Outreach and education efforts help achieve administration initiatives and priorities by assuring that students are encouraged to study science and mathematics, that technical and professional curricula equip practitioners to apply renewable energy and energy efficient technologies, and that advances in the field are broadly known and appreciated. EE will continue to work with private industry, the national laboratories and educational institutions to promote interest in the study of science in general and renewable energy and energy efficiency technology in particular. One representative activity is the Junior Solar Sprint. This is a competition for junior high school students who, with advice and assistance of mentors provided pro bono by the American Society of Mechanical Engineers, build and race solar-powered model cars. In 1994, the last year for which figures are available, over 40,000 students in 700 schools were involved.

In FY 1996, OTFA will continue its major technology transfer effort featuring the commercialization of renewable energy (RE) technologies. RE technologies are key growth areas in the global economy. The search for sustainable development opportunities has made RE technologies more attractive to the commercial marketplace. The Commercialization Ventures program accelerates the deployment of and use of emerging RE technologies as mandated by the Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218), as amended by Sections 1201 & 1202 of the Energy Policy Act of 1992 (EPACT), P.L. 102-486. This program facilitates the entrance of new RE products and services into the marketplace by reducing financial barriers to the commercialization of RE technologies. Project proposals are solicited from across the broad spectrum of RE technologies and crosscut all RE applications unlike other commercialization efforts which target specific RE technologies or specific applications. This program is based on using market "pull" to draw new, commercially viable RE products into the marketplace rather than attempting to "push" a particular technology into the marketplace. The program utilizes private sector financial and market expertise to analyze, package and solicit leveraged private sector funding for new products and services having good market potential.

Strategic Objectives and Performance Indicators:

Many of the activities under the Solar Technology Transfer Program primarily support the Market Conditioning Objective of the Office of Technical and Financial Assistance (OTFA), which is to increase the extent to which energy market decisions are based on a better understanding of the economics, environmental and energy security benefits, and operations, of energy efficiency and renewable energy technologies and practices. Specific program outputs are measurable in terms of the number of information products developed and distributed, the number of people served and

I. Solar Technology Transfer (Cont'd)

the level of customer satisfaction. The Energy Efficiency and Renewable Energy Clearinghouse (EREC) will provide information and technical assistance in response to inquiries from 80,000 inquiries while maintaining a customer satisfaction level of +90 percent. In support of EREC and the technology transfer process, the Technical Information Program (TIP) will produce 12 new publications and fact sheets, upgrade the EE exhibit and display it at 15 trade shows or conventions, update the existing EE video and produce a multimedia presentation on CD ROM for EE. The Junior Solar Sprint program in FY 1994 involved 40,000 students in 700 schools. In FY 1996, as in FY 1995, the target participation level is 70,000 students in 1,000 schools. The North Carolina Agricultural and Technical State University cooperative education program, initiated in FY 1993 with eight students, expanded in FY 1994 to an additional 15 students will continue.

The Commercialization Ventures activity, on the one hand, primarily supports -- and is OTFA's major strategy for accomplishing -- the Commercialization Objective, which is to accelerate the rate at which viable, new renewable energy technologies and practices are drawn into the domestic and international marketplace. The outputs of the Commercialization Ventures activity are measurable as an increase in the cumulative number of and amount of non-Federal funding for such ventures. In FY 1996, the Commercialization Ventures Program will fund from two to four new projects. The ultimate outcomes can be measured as an increase in annual gross sales of U.S. renewable energy equipment, products and services, along with economic growth (an increase in the number of jobs) due to the increased business.

II. A. Summary Table: Solar Technology Transfer

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
T&FA - Information and Communications				
STIP/CAREIRS and Tech Transfer Ventures.....	$ 20,533	$ 22,406	$ 17,758	$ -4,648
Subtotal, T&FA - Information and Communications	$ 20,533	$ 22,406	$ 17,758	$ -4,648
Total, Solar Technology Transfer	$ 20,533	$ 22,406	$ 17,758	$ -4,648

II. B. Laboratory and Facility Funding Table: Solar Technology Transfer

National Renewable Energy Lab	$ 3,025	$ 3,000	$ 2,500	$ -500
All Other	17,508	19,406	15,258	-4,148
Total, Solar Technology Transfer	$ 20,533	$ 22,406	$ 17,758	$ -4,648

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solar Technology Transfer			
T&FA - Information and Communications			
STIP/CAREIRS and Tech Transfer Ventures	STIP/CAREIRS: Develop and produce technical information products which are designed to accelerate the introduction and implementation of renewable and energy efficiency technologies in national and international markets. Coordinate CAREIRS information service with NATAS in responding to approximately 80,000 total requests for renewable energy/ energy efficiency information. Strengthen program through the development of outreach and educational aspects, working with private industry, national laboratories and educational institutions. Conduct Planning and development for implementation of renewable energy technology transfer activities authorized by EPACT, in particular Section 1211 (Innovative Renewable Energy Technology Transfer Program). (NREL) ($5,045)	STIP/CAREIRS: Develop and produce technical information products which are designed to accelerate the introduction and implementation of renewable and energy efficiency technologies in national and international markets. Coordinate CAREIRS information service with NATAS in responding to approximately 80,000 total requests for renewable energy/ energy efficiency information. Strengthen program through the development of outreach and educational aspects, working with private industry, national laboratories and educational institutions. Provide support for implementation of renewable energy technology transfer activities authorized by EPACT, in particular Section 1211 (Innovative Renewable Energy Technology Transfer Program). (NREL) ($4,788)	STIP/EREC: Develop and produce technical information products which are designed to accelerate the introduction and implementation of renewable and energy efficiency technologies in national and international markets. Continue operation of EREC (a consolidation of the former CAREIRS with NATAS, which is funded under the Energy Conservation appropriation), responding to approximately 80,000 total requests for renewable energy/energy efficiency information. Continue outreach and education, working with private industry, national laboratories and educational institutions. ($3,974)
	COMMERCIALIZATION VENTURES: Initiate a major technology transfer program through the solicitation of projects for the commercialization and demonstration of renewable energy technologies. (EPACT Sections 1201 and 1202) ($10,663)	COMMERCIALIZATION VENTURES: Initiate a second solicitation for projects for the commercialization and demonstration of renewable energy technologies. (EPACT Sections 1201 and 1202) ($11,018)	COMMERCIALIZATION VENTURES: Continue to competitively select projects for the commercialization and demonstration of viable, emerging renewable energy technologies. (EPACT Sections 1201 and 1202) ($10,814)

III. Solar Technology Transfer (Cont'd):
T&FA - Information and Communications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
STIP/CAREIRS and Tech Transfer Ventures (Cont'd)	INDIAN ENERGY RESOURCES: Conduct program to promote energy resource development and energy vertical integration on Indian reservations (EPACT Section 2603). Provide financial assistance to encourage the adoption of energy efficiency and renewable energy projects on Indian reservations. (EPACT Section 2606) ($4,825)	Provide for continuing preconstruction activities for the Navajo Transmission Project; expedite the completion of required environmental and right-of-way activities. This project will be administered through the Western Area Power Administration. (EPACT Section 2603) ($6,600)	Provide funds to tribal governments to carry out projects to evaluate the feasibility, develop options for, and encourage the adoption of renewable energy and energy efficiency projects on Indian reservations. (EPACT Section 2606) ($2,970)
	$20,533	$22,406	$17,758
Subtotal, T&FA - Information and Communications	$20,533	$22,406	$17,758
Solar Technology Transfer	$20,533	$22,406	$17,758

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Solar Program Support

The Electric Utility Sector is diverse and complicated. Its stakeholders include consumers, regulators, and suppliers as well as the utilities themselves. The utilities, in turn, consist of investor-owned utilities, municipals, cooperatives and independent producers who vary significantly in patterns of demand and growth and in relative emphasis on new supply projects. Additionally, there are overarching regional differences in available generation capacity, available transmission capacity, and extent of renewable resources. The growing emphasis on integrated resource planning has increased demand for cost/performance information on renewable energy options and methods for evaluating their impacts. This program supports the planning and evaluation of Utility Technology programs by working with the renewables industry, utilities and other stakeholders to (a) identify, understand, and address the market barriers and market opportunities for renewable energy technologies, (b) estimate the effects of utility industry trends and issues on the development and deployment of these technologies, and (c) develop a firm analytical basis for program planning and evaluation. The program works with stakeholders to examine competitive, environmental, regulatory, and other issues impacting utility markets and the need for technological developments. It supports the implementation of relevant sections of the Energy Policy Act of 1992 (EPACT), including the renewable energy production incentive for publicly owned utilities. It also includes funds for Climate Challenge, a DOE/utility cooperative effort to reduce greenhouse gas emissions. Under Climate Challenge, utilities will invest in energy efficiency, renewable energy, and other facilities or activities that result in reduced greenhouse gas emissions. Over 800 utilities have indicated an interest in participating in the program.

II. A. Summary Table: Solar Program Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector - Management				
Evaluation and Planning	$ 4,827	$ 12,199	$ 7,345	$ -4,854
Subtotal, Utility Sector - Management	$ 4,827	$ 12,199	$ 7,345	$ -4,854
Total, Solar Program Support	$ 4,827	$ 12,199	$ 7,345	$ -4,854

II. B. Laboratory and Facility Funding Table: Solar Program Support

National Renewable Energy Lab	2,000	2,000	2,000	0
Sandia National Laboratories	250	250	250	0
All Other	2,577	9,949	5,095	-4,854
Total, Solar Program Support	$ 4,827	$ 12,199	$ 7,345	$ -4,854

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solar Program Support			
Utility Sector - Management			
Evaluation and Planning	Continue to provide a firm analytical basis for program evaluation and planning. Examine evolving markets and technology goals, especially in the context of the distributed utility concept. Address other environmental, regulatory, competitive, and technological issues. (NREL, SNL) ($2,827)	Continue support for planning and evaluation of utility technology programs to ensure Total Quality Management objectives are met. Work with utilities and other stakeholders to develop planning methods for renewable resources, validate renewable electric planning models, and develop a firm analytical basis for utility technology programs. In collaboration with EPRI and other industry partners, carry out research agenda on distributed utility valuation. Expand outreach activities, including workshops, publications, and educational programs to strengthen communication links with stakeholders and increase program effectiveness. (NREL, SNL) ($2,295)	Support planning and evaluation of utility technology needs to help maximize effectiveness of solar and renewable programs. Work with utilities and other stakeholders to analyze market barriers and opportunities for renewable energy technologies and develop a firm analytical basis for utility technology programs. Support outreach activities such as workshops, publications, or educational programs to strengthen communication links with stakeholders and increase program effectiveness. (NREL) ($2,357)
	Provide support for relevant sections of the Energy Policy Act of 1992 (EPACT) for which other DOE units have lead responsibility. Begin implementation of Section 1212 of EPACT, which provides incentive payments of 1.5 cents per kilowatt-hour to "qualified renewable energy facilities" that generate electricity using solar, wind, biomass, or geothermal power sources. Funds in FY 1994 will be used to design and implement the program. The preparation of a multi-year renewable energy plan (Section 2111) will be completed. Procedures for making renewable energy advancement awards (Section 1204) will be developed and initial award(s) will	Fund first year's payments for the renewable energy production incentive (Section 1212). The incentive is expected to stimulate the installation of up to 100 MW per year of new renewable capacity. Make renewable energy advancement awards (Section 1204). Implement five-year plan for renewable electricity (EPACT Section 2111) (NREL) ($9,904)	Fund second year payments for the renewable energy production incentive (Section 1212). The incentive is expected to stimulate the installation of new renewable capacity by publicly owned utilities and non-profit cooperatives. ($2,988)

III. Solar Program Support (Cont'd):
Utility Sector - Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Evaluation and Planning (Cont'd)	be made. (EPACT Sections 1204, 1212, and 2111) (NREL) ($2,000)		
	No Activities. ($0)	No Activities. ($0)	CLIMATE CHANGE ACTION PLAN: Conduct activities to support Climate Challenge, a voluntary DOE/utility effort to reduce greenhouse gases. Develop and distribute reports and other publications that document utility experiences with projects identified in the Climate Challenge Project Workbook. Prepare and disseminate "how to" materials to assist utility planners and decisionmakers in evaluating candidate projects. Conduct national, regional, or local workshops for utility audiences. ($2,000)
	$4,827	$12,199	$7,345
Subtotal, Utility Sector - Management	$4,827	$12,199	$7,345
Solar Program Support	$4,827	$12,199	$7,345

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Resource Assessment

Reliable information on renewable energy resources is essential for the successful design, planning, and deployment of renewable technologies (i.e, solar, wind, biomass, hydro, and geothermal systems). This information is being developed in ways such that it can be displayed geographically and also temporally to determine how the various technologies will perform at different locations, and how renewable technologies might be integrated into electric utility systems or be deployed as stand-alone systems. U.S. and international data bases for various renewable technologies are being incorporated into a multi-resource data base at the National Renewable Energy Laboratory (NREL). Products from these data bases are being made available through NREL's Renewable Energy Data Center, which was established in FY 1994 under the Resource Assessment Program. Geographic Information Systems are being used as a tool to display resource information, with a particular focus in FY 1995 on solar and wind resources. Planning for incorporating other renewable resource information into the data base and made available through the Renewable Energy Data Center has also begun. This will make the renewable resource data and information readily available to planners and developers for facilitating the commercial expansion of the U.S. renewable technology industry.

Along with data bases for various renewable technologies, tools and models for interpolating and extrapolating data to regions where no measurements exist continue to be developed, with particular emphasis on reducing the uncertainties in information on energy resources available to solar technologies. Planning to see how these studies might be extended to the other renewable technologies has also begun. Also, for the solar technologies, a cooperative cost-sharing solar measurement program was begun in FY 1994, with additional expansion in this Cooperative Measurement Network occurring in FY 1995, resulting in a total of about 50-100 measurement sites throughout the U.S. This cooperative network builds upon successful work conducted by the Historically Black Colleges and Universities, and involves 50-50 cost-sharing arrangements with regional organizations. This network will augment the baseline solar measurement network that has been operated by National Oceanographic and Atmospheric Administration for a number of years. Such information will support site evaluation activities necessary for successful deployment of renewable technologies.

In FY 1996 tools and models developed for the U.S. will be adapted for international applications. Expansion in the development of the comprehensive renewable energy resource data base and further refinements to the Renewable Energy Data Center will be made. This will include increasing efforts to incorporate existing and refined biomass, geothermal, and microhydro resource data bases. International renewable energy information will continue to be incorporated into the data base. This will satisfy the short-term goals of the Resource Assessment Program. Mid-term goals will be met by the Cooperative Measurement Network becoming fully established, encompassing approximately 300 solar and wind measurement locations throughout the U.S. A working relationship with the World Radiation Data Center will continue so that the solar community will have access to important international solar resource data. Eventual completion of the data bases and related resource information will provide a highly reliable and comprehensive repository of world-wide renewable energy resources that will meet the long-term goals of the Program and will provide a significant capability for the U.S. renewable energy industry to be competitive both domestically and internationally.

Resource Assessment Program

Performance Metrics

-- Develop additional products and services for use by program stakeholders for general information, and site specific analyses leading to the deployment of renewable energy technologies. General calls requesting information on resource assessment totaled 350 in FY 1994. In addition, a major product completed two years ago were the National Solar Radiation Data Base (available on CD-ROM), and Associated Data Manual. These products provide site specific solar radiation data throughout the U.S. In FY 1994, there were 300 requests for these products.

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I. Resource Assessment (Cont'd)

-- Implement the cooperative cost-sharing solar measurement program to increase the number of solar measurement sites in the U.S. Priority is being given to regions in the U.S. where no sites currently exist. Under this program, we plan to expand our existing network by an additional 15-20 measurement sites in FY 1995, with the long term goal of approximately 300 solar measurement locations by FY 1999.

-- Implement the comprehensive renewable energy data base to incorporate existing and refined wind, biomass, geothermal and hydro resource data bases. The first priority is U.S., with eventual expansion worldwide. Currently, the program maintains solar radiation worldwide. In FY 1995, the data base will be expanded to contain U.S. wind data. In FY 1996, we plan to maintain biomass data in the U.S., and subsequently, data on U.S. geothermal and hydro resources. The long term goal is to obtain international data on these renewable energy resources.

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no significant growth in FTEs beyond the FY 1995 level despite major program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

II. A. Summary Table: Resource Assessment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector - Resource Assessment				
Resource Assessment	$ 2,014	$ 3,558	$ 4,268	$ 710
Capital Equipment	194	392	397	5
Subtotal, Utility Sector - Resource Assessment	$ 2,208	$ 3,950	$ 4,665	$ 715
Total, Resource Assessment	$ 2,208	$ 3,950	$ 4,665	$ 715

II. B. Laboratory and Facility Funding Table: Resource Assessment

National Renewable Energy Lab	$ 2,166	$ 3,800	$ 4,265	$ 465
All Other	42	150	400	250
Total, Resource Assessment	$ 2,208	$ 3,950	$ 4,665	$ 715

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Resource Assessment			
Utility Sector - Resource Assessment			
Resource Assessment	Develop additional information dissemination products. (NREL) ($100)	No Activities. ($0)	No Activities. ($0)
	Expand core program activities. (NREL) ($1,000)	Maintain core program activities - data collection, analysis, publication and dissemination. (NREL) ($1,058)	Maintain core program activities (U.S. and international) - data analysis and modeling, publication and information dissemination. (NREL) ($968)
	Continue expansion of the network by 15-20 new measurement centers. (NREL) ($500)	Continue expansion of the network by an additional 15-20 new measurement centers. (NREL) ($1,000)	Continue development of Cooperative Measurement Network encompassing approximately 200 locations. (NREL) ($1,400)
	Establish center for data integration and geographic analysis. (NREL) ($414)	Expand capabilties of center for data integration and geographic analysis. (NREL) ($600)	Continue capabilities of Renewable Energy Data Center and geographic analysis, including international resources. (NREL) ($400)
	No Activities. ($0)	Initiate development of a comprehensive renewable energy data base that will include information on wind, biomass, geothermal and hydro as well as solar based on U.S. and international resources. (NREL) ($900)	Continue the comprehensive renewable energy data base by adding more information on wind, solar, biomass, geothermal and hydro for U.S. and international resources. (NREL) ($1,500)
	$2,014	$3,558	$4,268
Capital Equipment	Obtain equipment needed for additional resource measurement activities for the solar radiation network and in-house laboratory. (NREL) ($194)	Obtain equipment needed for additional resource measurement activities for the solar radiation network and in-house laboratory. (NREL) ($392)	Obtain equipment needed for additional resource measurement activities for the Cooperative Measurement Network and Renewable Energy Data Center. (NREL) ($397)
	$194	$392	$397

III. Resource Assessment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Utility Sector - Resource Assessment	$2,208	$3,950	$4,665
Resource Assessment	$2,208	$3,950	$4,665

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: National Renewable Energy Laboratory

NREL is the Department's lead laboratory performing research and development in renewable energy supply technologies. The FY 1996 request includes funds to maintain and upgrade the NREL facilities in order to ensure continuity of research, integrity of effort, and standards of scientific and engineering excellence.

UTILITY SECTOR: Funds for NREL construction and equipment assure that facilities and equipment are in place for research conducted in Utility Sector programs. The request includes funding to provide minor modifications to utilities, communications, and roadways as required by environmental/safety and compliance issues. Obsolete and inadequate communications, computing, and service equipment will be replaced.

INDUSTRY SECTOR: The Field Test Laboratory Building (FTLB) will be expanded and renovated to provide more high bay research and support services space for thermal process research to convert renewable resources and municipal and industrial wastes to higher value fuels and chemicals. This will accommodate the growth in research being done jointly with industry utilizing CRADAS. Modifications to the central heating and cooling plant located at the FTLB will provide additional heating and cooling capacity for new research facilities.

II. A. Summary Table: National Renewable Energy Laboratory

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Facilities				
Facility Construction	$ 3,086	$ 2,750	$ 0	$ -2,750
General Plant Projects	515	1,195	120	-1,075
General Purpose Equipment	243	1,548	380	-1,168
Subtotal, Facilities	$ 3,844	$ 5,493	$ 500	$ -4,993
Subtotal, Utility Sector	$ 3,844	$ 5,493	$ 500	$ -4,993
Industry Sector				
Facilities				
Facility Construction	$ 0	$ 0	$ 5,500	$ 5,500
General Plant Projects	1,116	330	0	-330
General Purpose Equipment	0	0	0	0
Subtotal, Facilities	$ 1,116	$ 330	$ 5,500	$ 5,170
Subtotal, Industry Sector	$ 1,116	$ 330	$ 5,500	$ 5,170
Buildings Sector				
Facilities				
General Plant Projects	$ 0	$ 0	$ 0	$ 0
General Purpose Equipment	0	0	0	0
Subtotal, Facilities	$ 0	$ 0	$ 0	$ 0
Subtotal, Buildings Sector	$ 0	$ 0	$ 0	$ 0
Transportation Sector				
Facilities				
General Plant Projects	$ 46	$ 140	$ 0	$ -140
General Purpose Equipment	752	0	0	0
Subtotal, Facilities	$ 798	$ 140	$ 0	$ -140
Subtotal, Transportation Sector	$ 798	$ 140	$ 0	$ -140
Technical & Financial Assistance Sector				
Facilities				
General Plant Projects	$ 0	$ 0	$ 0	$ 0
General Purpose Equipment	0	0	0	0

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II. A. Summary Table: National Renewable Energy Laboratory - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Subtotal, Facilities	$ 0	$ 0	$ 0	$ 0
Subtotal, Technical & Financial Assistance Sector	$ 0	$ 0	$ 0	$ 0
Total, National Renewable Energy Laboratory	$ 5,758	$ 5,963	$ 6,000	$ 37

II. B. Laboratory and Facility Funding Table: National Renewable Energy Laboratory

National Renewable Energy Lab	$ 5,758	$ 5,963	$ 6,000	$ 37
Total, National Renewable Energy Laboratory	$ 5,758	$ 5,963	$ 6,000	$ 37

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
National Renewable Energy Laboratory			
Utility Sector			
Facilities			
Facility Construction	Expand the National Wind Technology Center with construction of a Wind Energy User Facility, wind test pad upgrades, and site infrastructure upgrades, to create state-of-the-art wind testing facilities. ($3,086)	Provide utility and circulation upgrades to support site construction. Extend and connect power, telecommunications systems to existing primary distribution systems; extend potable water, fire protection systems; gas, sewer; heated, chilled water. Upgrade and improve roads, parking, walkways; drainage, ponds; lighting and landscaping. ($2,750)	No Activities. ($0)
	$3,086	$2,750	$0
General Plant Projects	Complete NREL site modifications including communications link and additional security fencing. Convert existing space in the bulk storage building to a metrology lab for NREL-wide equipment calibration to meet NIST scientific standards. ($515)	Construct Shipping and Receiving Facility to free up prime high bay space in FTLB. Utilize FTLB space for expanded pilot plant research. Minor modifications to utilities, communications and roadways. ($1,195)	Provide general repair, retrofit, and maintenance for utilities, roadways and communications systems. ($120)
	$515	$1,195	$120
General Purpose Equipment	Replace obsolete equipment for testing and calibration of laboratory scientific instrumentation. ($243)	Replace obsolete equipment for: testing and calibration of laboratory scientific instrumentation; administrative computer servers; copiers; security system; visuals development; transmission electron microscope data acquisition system, and scientific computing equipment. ($1,548)	Replace outmoded leased telephone PBX switch at the National Wind Technology Test Center to accomodate growth at user facility. Provide portable manlift for access to overhead HVAC, electrical, piping, fire protection systems, and research apparatus for FTLB and BTRF. Add servers to provide additional computer capacity for financial and administrative systems. ($380)

III. National Renewable Energy Laboratory (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Equipment (Cont'd)	$243	$1,548	$380
Subtotal, Facilities	$3,844	$5,493	$500
Subtotal, Utility Sector	$3,844	$5,493	$500
Industry Sector			
Facilities			
Facility Construction	No Activities. ($0)	No Activities. ($0)	Expand and renovate Field Test Laboratory Building (FTLB). Convert high bay space for shipping and receiving into laboratories and research support space. Construct two-story addition to provide high bay laboratory and support space for process development unit size testing of thermal processes. Install boiler and chiller to increase capacity of central heating and cooling plant located in FTLB. ($5,500)
	$0	$0	$5,500
General Plant Projects	Complete Industrial Thermochemical User Test Facility to support pyrolysis process engineering research with flammable materials, in support of thermal conversion of renewable feedstocks, and industrial and municipal waste. ($1,116)	Improve facilities for user research facility on mesa top: provide communications duct bank; extend water, sewer utility lines; and replace temporary with permanent toilet. ($330)	No Activities. ($0)
	$1,116	$330	$0

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III. National Renewable Energy Laboratory (Cont'd):
Industry Sector (Cont'd):
Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Equipment	No Activities. ($0)	No Activities. ($0)	No Activities. ($0)
	$0	$0	$0
Subtotal, Facilities	$1,116	$330	$5,500
Subtotal, Industry Sector	$1,116	$330	$5,500
Buildings Sector			
Facilities			
General Plant Projects	No Activities. ($0)	No Activities. ($0)	No Activities. ($0)
	$0	$0	$0
General Purpose Equipment	No Activities. ($0)	No Activities. ($0)	No Activities. ($0)
	$0	$0	$0
Subtotal, Facilities	$0	$0	$0
Subtotal, Buildings Sector	$0	$0	$0

III. National Renewable Energy Laboratory (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Sector			
Facilities			
General Plant Projects	Expand FTLB parking lot to accomodate growth in staff and visitor (industrial partner) activities. ($46)	Upgrade Bio-Technology Research Facility (BTRF) heating, ventilating, and air-conditioning, compressed air, and electrical systems to support ethanol fuels development. ($140)	No Activities. ($0)
	$46	$140	$0
General Purpose Equipment	Provide replacement administrative equipment including copiers, photo typesetting equipment, and network interfaces. Provide maintenance and support equipment: Computer-controlled milling machine and a motorized forklift. ($752)	No Activities. ($0)	No Activities. ($0)
	$752	$0	$0
Subtotal, Facilities	$798	$140	$0
Subtotal, Transportation Sector	$798	$140	$0
Technical & Financial Assistance Sector			

III. National Renewable Energy Laboratory (Cont'd):
Technical & Financial Assistance Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Facilities			
General Plant Projects	No Activities. ($0)	No Activities. ($0)	No Activities. ($0)
	$0	$0	$0
General Purpose Equipment	No Activities. ($0)	No Activities. ($0)	No Activities. ($0)
	$0	$0	$0
Subtotal, Facilities	$0	$0	$0
Subtotal, Technical & Financial Assistance Sector	$0	$0	$0
National Renewable Energy Laboratory	$5,758	$5,963	$6,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

SOLAR ENERGY
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	FY 1997 Request	Unappropriated Balance
GP-C-002	General Plant Projects - Utility Sector, NREL		. . .	$515	$1,195	$120	. . .	. . .
GP-C-002	General Plant Projects - Industrial Sector, NREL		. . .	1,116	330	0	. . .	. . .
GP-C-002	General Plant Projects - Transportation Sector, NREL		. . .	46	140	0	. . .	. . .
Subtotal	General Plant Projects		. . .	$1,677	$1,665	$120	. . .	. . .
96-E-100	FTLB Renovation and Expansion, NREL	$5,500	$0	0	0	5,500	$0	$0
95-E-103	South Table Mountain Site Infrastructure, NREL	2,750	0	0	2,750	0	0	0
94-E-102	National Wind Technology Center Expansion, GO	3,180	0	3,086	0	0	0	0
Subtotal	Line Item Projects	$11,430	$0	$3,086	$2,750	$5,500	$0	$0
Total	Supporting Services	$11,430	$0	$4,763	$4,415	$5,620	$0	$0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 96-E-100, FTLB Renovation and Expansion
National Renewable Energy Laboratory, Golden, Colorado

TEC: $5,500
TPC: $5,800

Start Date: 2nd Qtr., FY 1996

Completion Date: 3rd Qtr., FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
FY 1995	$0	$0	$0	$0
FY 1996	5,500	0	5,500	2,800
FY 1997	0	0	0	2,700

3. Narrative:

The additional laboratory and support spaces provided by this project will enable NREL to maintain and enhance its position as a leading developer of thermal processes for the conversion of renewable resources and wastes, (municipal and industrial) to higher value fuels, chemicals. This facility will be designed to house process development unit (PDU) size experiments that demonstrate the viability of pyrolysis and electric power-related technologies. As these technologies move from the bench scale, it is necessary to develop the overall process concept at the PDU level to verify the economic assessments to attract industry support. This project will provide laboratory space and test facilities for conducting internationally recognized research in pyrolysis processes by NREL researchers, as well as through Cooperative Research and Development Agreements (CRADAs) with industry.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 95-E-103, South Table Mountain Site Infrastructure
National Renewable Energy Laboratory, Golden, Colorado

TEC: $2,750
TPC: $2,950

Start Date: 2nd Qtr., FY 1995

Completion Date: 2nd Qtr., FY 1996

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
FY 1994	$0	$0	$0	$0
FY 1995	2,750	0	2,750	1,800
FY 1996	0	0	0	950
FY 1997	0	0	0	0

3. Narrative:

The South Table Mountain (STM) Infrastructure project will provide the utilities for the build-out of the 121 hectare (300 acre) STM site. Included will be electrical power and telecommunications extensions which will encompass connection of the power and telecommunications systems to the existing primary distributions systems, extension of the potable water service and the fire protection systems; gas; sewer; heated and chilled water in accomodate the practical utilization of the STM site. The utility design will also incorporate the capability for further expansion if the power/communications needs should exceed the current NREL Master Plan estimates.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 94-E-102, National Wind Technology Center Expansion, Golden, Colorado

TEC: $3,160
TPC: $3,300

Start Date: 2nd Qtr., FY 1994

Completion Date: 2nd Qtr., FY 1996

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
FY 1993	$0	$0	$0	$0
FY 1994	3,160	-94 a/	3,066	500
FY 1995	0	0	0	2,000
FY 1996	0	0	0	566
FY 1997	0	0	0	0

a/ Reflects adjustment of -$94,000 for the FY 1994 Recission, P.L. 103-211.

3. Narrative:

The National Wind Technology Center Expansion (NWTCE) will consist of a new Wind Energy User Facility, and nine new outdoor test pads for the engineering evaluation of advanced wind turbines. Also included in this project will be the site infrastructure improvement required to support the programmatic activities. The NWTCE will be located at the existing National Wind Technology Center (NWTC) at the Department of Energy Rocky Flats site in Colorado. Upon completion of this expansion, the NWTC will be a state-of-the-art facility dedicated to research and development in wind energy technology. This test site will be used by both NREL staff and industrial partners as well as universities and other U.S. Department of Energy (DOE) laboratories.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOLAR ENERGY

I. Preface: Program Direction

The FY 1996 request for Solar Energy Program Direction provides for 108 full time equivalents (FTE) to support the utility technology, building technology, transportation technology, industrial technology, and technical and financial assistance sectors of solar energy-related activities. These staff perform all project management activities associated with the programs, ranging from policy development and long-range planning to general administration and include functions such as: preparation of technical research and development plans; assessment of scientific and technical needs and priorities; development and defense of budgets; review, evaluation and funding of research proposals; monitoring, evaluation,and direction of laboratory work and allocation of resources; oversight of implementation of university and industrial research program; and control of interagency and international liaison and negotiation. These staff have a significant level of responsibility in the implementation of relevant portions of the Energy Policy Act of 1992 (EPACT).

The FY 1996 request also supports the continued operation of the Golden Field Office which was established in late 1992 to consolidate all field responsibilities for the Energy Efficiency and Renewable Energy (EE) programs at the National Renewable Energy Laboratory (NREL), ten EE Support Offices, and the Golden Field Office. This dedicated field organization is responsive to a technology program that spans a large continuum ranging from scientific research to commercialization and outreach activities and emphasizes customer orientation, innovation and partnerships, not only with private industry, but with Federal laboratories, States, and localities.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector - Program Direction	$ 4,947	$ 4,580	$ 5,840	$ 1,260
Golden Field Office	2,040	3,620	3,620	0
Total, Program Direction	$ 6,987	$ 8,200	$ 9,460	$ 1,260

II. B. Laboratory and Facility Funding Table: Program Direction

All Other	$ 6,987	$ 8,200	$ 9,460	$ 1,260
Total, Program Direction	$ 6,987	$ 8,200	$ 9,460	$ 1,260

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

GEOTHERMAL ENERGY

Geothermal energy comprises 40% of the U.S. energy resource base. Electric power from geothermal resources is delivered at low environmental impact and has the highest reliability of base-load power from any source. Geothermal power in the U.S. has grown from 800 megawatts in 1980 to over 2,100 megawatts today, the largest single fraction of the world's current total of 5800 geothermal megawatts. Technological improvements sponsored by the Department have spurred this advance. Although geothermal power promises to be one of the most economic electric energy sources, conventional fuels at today's low prices offer keen competition in U.S. energy markets. Overseas, geothermal electric power is becoming a preferred energy source where high quality resources exist, and U.S. geothermal companies, with their advanced technology, are competing successfully against traditional for the design and installation of new central station plants.

The desirability of geothermal energy as an electric power source is based in part on its environmental compatibility. Modern geothermal plants generate very low levels of greenhouse gases, releasing about a thousand times less carbon dioxide than fossil fuel plants, for example. Releases of other toxic gases are low as well, and some advanced geothermal facilities release none at all. Geothermal energy is an attractive option not only because of its cleanliness and its economy, but because it reduces dependency on foreign sources of energy.

The Geothermal Energy Program, following the legislative and policy directives of the Energy Policy Act (EPACT) of 1992 and other founding legislation, and the Climate Change Action Plan, collaborates with industry and utilities to bring about technology improvements that will increase the availability and accessibility of geothermal resources in meeting the Nation's energy needs. In the latter half of the 1990s, the cost-shared research, development, and deployment activities of the Geothermal Program will result in improved systems having lower cost and greater reliability than today's plants for both domestic and foreign markets. The program will identify and develop new geothermal reservoirs, and advance geothermal direct-use applications, especially geothermal heat pump technology, into residential and commercial markets.

The technical advances from the Department's geothermal program, leading to the recent successes of the U.S. geothermal industry include:

-- polycrystalline diamond bits to lower drilling costs

-- new cements to extend geothermal well life

-- chemical tracers to help determine fluid flow in reservoirs

-- elastomer sealing materials to extend pump lifetime

-- polymer-concrete pipe liners to reduce power plant costs

-- industry-coupled drilling to discover new fields (8 new fields to date)

-- advanced technology for re-injection of spent geothermal fluids

-- advanced technology for defining the scope of new reservoirs

GOALS

The primary research goal for the Geothermal Energy Program is to reduce the life-cycle cost of producing electricity with geothermal resources by 30 percent, thereby facilitating industrial development of as much as 10,000 megawatts of geothermal electric power worldwide by U.S. firms by

the year 2010.

The Geothermal Energy Program will accomplish this by working collaboratively with industry in developing cost-competitive technologies to: (1) locate and develop undiscovered geothermal reservoirs, (2) develop advanced technologies to improve the competitiveness of geothermal power (EPACT Section 2111), geothermal heat pumps and geothermal direct heat applications, (3) promote deployment of the technology by industry for small geothermal electric power plants in domestic and foreign markets, and (4) encourage adoption of geothermal heat pumps to reduce electricity demand and resulting greenhouse gas emissions.

These program actions will result in increases in the amount of geothermal energy that can be economically recovered and will assist the U.S. geothermal industry in capturing up to 50 percent of new geothermal international power markets by 2000 as well as in retaining U.S. markets.

STRATEGY

To achieve these goals, research focuses on developing cost-competitive technologies for: finding and evaluating new geothermal prospects; reducing the high cost of drilling wells; dependably producing geothermal fluids from reservoirs; and efficiently converting geothermal heat to electric power. Once established in commercial markets, these technologies will reduce developer risk and cost, thus accelerating and expanding the use of geothermal energy. Over 50% of the Geothermal Energy Program is cost-shared on a 50/50 basis with industry and other participants.

In monitoring progress, several performance measures can be applied. These include: (1) 10 new resource development areas by 2000; (2) 6 new producing geothermal reservoirs by 2005; (3) 3,500 MWe of total installed capacity by 2000; (4) an envelope of 3-7 cents per kWh in the cost of power from new geothermal reservoirs by 2005. Other key measures for the program include 1.5 million geothermal heat pumps installed throughout the U.S. by 2000, commitments for U.S. companies to build at least 3000 MWe of geothermal capacity in foreign countries by 2005, and reductions in worldwide carbon dioxide emissions by 25 million tons per year by 2000.

FY 1996 BUDGET REQUEST

The proposed Geothermal Energy Program builds on prior R&D successes and last year's initiatives: the Geothermal Power Market Mobilization Initiative, GT-WORLD, and NADET. The mobilization initiative promotes industry deployment of new technology and supports the Climate Change Action Plan through cost-shared actions that can lead to increased geothermal power plants to enhance electricity supplies and geothermal heat pumps to offset electricity demand. GT-WORLD capitalizes on the research gains of recent years to foster more rapid deployment of U.S. technologies in other countries. These initiatives involve close collaboration with industry in specific projects whose goal is to bring 11,000 MW of geothermal energy into use by the year 2000. Moreover, they are expected to create up to 200,000 jobs and strengthen the U.S. economy. The NADET (National Advanced Drilling and Excavation Technologies) Program brings together a consortium of public and private interests in a cost-shared effort to develop advanced technology for drilling, mining, and tunneling through rock. A higher performing system for penetrating rock will have major impacts on resource extraction, construction, and waste management well into the next century.

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no growth in FTEs beyond the FY 1995 level despite program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Geothermal Energy

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Geothermal Systems					
Operating Expenses	$ 22,136	$ 36,277	$ 644	$ 36,921	$ 36,630
Capital Equipment	873	900	-14	886	897
Subtotal, Geothermal Energy	$ 23,009	$ 37,177	$ 630	$ 37,807	$ 37,527
Adjustment	-413	-420	-630	-2,420	-555 e/
TOTAL	$ 22,596 a/	$ 36,757 b/	$ 0	$ 35,387	$ 36,972
Summary					
Operating Expenses	$ 21,739	$ 35,867	$ 0	$ 34,511	$ 36,075
Capital Equipment	857	890	0	876	897
Total Program	$ 22,596	$ 36,757	$ 0	$ 35,387	$ 36,972
Staffing (FTEs)	15	14	0	14	14

Authorizations:
P.L. 93-410, "Geothermal Energy Research, Development and Demonstration Act of 1974"
P.L. 101-549, "Clean Air Act Amendments of 1990"
P.L. 101-575, "Solar, Wind, Waste, and Geothermal Power Production Inc ntives Act of 1990"
P.L. 102-486, "Energy Policy Act of 1992"

a/ Reflects the use of prior-year balances in accordance with the FY 1994 Energy and Water Development Appropriations Act, P.L. 103-126.
b/ The Department has prepared a reprogramming request for $8,100,000 to support continued research related to the "Kalina Cycle" at the Energy Technology Engineering Center; therefore, the $8,100,000 is not included in this total in FY 1995.
e/ Use of uncosted balances to be provided later.

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Utility Sector - Program Direction	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $4,147 12.1 Civilian personnel benefits $ 675 21.0 Travel and transportation of persons $ 475 25.2 Other services $ 0 Provide salaries, benefits, and travel to provide for the support of 77 FTEs, including normal increased salary and benefits at DOE Headquarters and in the field. In addition, provide for overhead costs for the FTEs in the field, such as communications, utilities, and rent. These activities were supported with $350 of unobligated carryover from FY 1993, and $4,947 in new BA. ($4,947) 77.0 FTE $4,947	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $3,619 12.1 Civilian personnel benefits $ 589 21.0 Travel and transportation of persons $ 414 25.2 Other services $ 675 Provide salaries, benefits, and travel to provide for the support of 64 FTEs, including normal increased salary and benefits at DOE Headquarters and in the field. In addition, provide for overhead costs for the FTEs in the field, such as communications, utilities, and rent. Includes $717 of unobligated carryover from FY 1994. ($4,580) 64.0 FTE $4,580	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $4,311 12.1 Civilian personnel benefits $ 733 21.0 Travel and transportation of persons $ 505 25.2 Other services $ 291 Provide salaries, benefits, and travel to provide for the support of 76 FTEs, including normal increased salary and benefits at DOE Headquarters and in the field. In addition, provide for overhead costs for the FTEs in the field, such as communications, utilities, and rent. ($5,840) 76.0 FTE $5,840
Golden Field Office	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $1,646 12.1 Civilian personnel benefits $ 268 21.0 Travel and transportation of persons $ 400 25.2 Other services $ 254 Supports costs associated with the operation of the Golden Field Office (GO). GO manages and administers the operating contract for the National Renewable Energy Laboratory (NREL). As such, this office is DOE's Federal manager for NREL's program execution,	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $1,767 12.1 Civilian personnel benefits $ 300 21.0 Travel and transportation of persons $ 400 25.2 Other services $1,153 The FY 1995 request will support the continued operation of the Golden Field Office (GO) which was established in late 1992 to consolidate all field responsibilities for the Energy Efficiency and Renewable Energy (EE)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $1,878 12.1 Civilian personnel benefits $ 320 21.0 Travel and transportation of persons $ 405 25.2 Other services $1,017 The FY 1995 request will support the continued operation of the Golden Field Office (GO) which was established in late 1992 to consolidate all field responsibilities for the Energy Efficiency and Renewable Energy (EE) programs at the National Renewable Energy Laboratory (NREL), ten EE

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Golden Field Office (Cont'd)	facility operation, and all site activities. The office has oversight over NREL subcontracts and consultant agreements, and it oversees NREL work for non-DOE entities, including work for other agencies. These activities were supported with $528 of unobligated carryover from FY 1993 and $2,040 of new BA. ($2,040)	programs at the National Renewable Energy Laboratory (NREL), ten EE Support Offices, and the Golden Field Office. This dedicated field organization is responsive to a technology program that spans a large continuum ranging from scientific research to commercialization and outreach activities. Also, it emphasizes customer orientation, innovation and partnerships, not only with private industry, but with Federal laboratories, States, and localities. The uniqueness of this organization in the Department's field structure could serve as a model to demonstrate government reinvention possibilities. GO manages and administers the Management and Operating contract for NREL and as such is the Federal manager for NREL program planning and execution, budget and financial management, information resource management, site infrastructure and construction, environment safety and health, procurement oversight, work for non-DOE entities, and various other program functions. Nearly two-thirds of the Energy Efficiency and Renewable Energy Programs at NREL are in support of Renewable Energy Programs in areas such as Photovoltaics, Biofuels Energy Systems, Wind Energy, Solar Thermal Energy, Geothermal, and Solar Buildings. GO also manages a wide variety of efficiency and renewable programs by contracting with commercialvendors, non-profit entities,and colleges and universities. These GO activities include all DOE actions from initial solicitation through the business and technical management of each contract. ($3,620)	Support Offices, and the Golden Field Office. This dedicated field organization is responsive to a technology program that spans a large continuum ranging from scientific research to commercialization and outreach activities. Also, it emphasizes customer orientation, innovation and partnerships, not only with private industry, but with Federal laboratories, States, and localities. The uniqueness of this organization in the Department's field structure could serve as a model to demonstrate government reinvention possibilities. GO manages and administers the Management and Operating contract for NREL and as such is the Federal manager for NREL program planning and execution, budget and financial management, information resource management, site infrastructure and construction, environment safety and health, procurement oversight, work for non-DOE entities, and various other program functions. Nearly two-thirds of the Energy Efficiency and Renewable Energy Programs at NREL are in support of Renewable Energy Programs in areas such as Photovoltaics, Biofuels Energy Systems, Wind Energy, Solar Thermal Energy, Geothermal, and Solar Buildings. GO also manages a wide variety of efficiency and renewable programs by contracting with commercialvendors, non-profit entities,and colleges and universities. These GO activities include all DOE actions from initial solicitation through the business and technical management of each contract. ($3,620)

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Golden Field Office (Cont'd)	31.0 FTE $2,040	33.0 FTE $3,620	32.0 FTE $3,620
Program Direction	108.0 FTE $6,987	97.0 FTE $8,200	108.0 FTE $9,460

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Geothermal Energy

FY 1995 Appropriation	$ 37,177
- Adjustment -	+630
FY 1995 Adjusted	$ 37,807
- Transfer -	0
FY 1995 Comparable	$ 37,807
Geothermal Systems	
- Exploration - Decrease will reduce industry-coupled drilling efforts and transfer of new exploration technology	-1,808
- Drilling - Decrease will cut back advanced drilling research and development	-1,121
- Reservoir Technology - Decrease will delay underground field work under the Hot Dry Rock Joint Ventures Program	-1,973
- Conversion - Increase due to ETEC operations	+6,960
- Environment - Reduce scope of CCAP efforts	-1,849
- Program Direction - Program Direction	0
- Capital Equipment - Postpone acquisition of field test instruments	-489
Subtotal Geothermal	$ 37,527
Adjustment	$ -555
FY 1996 Congressional Budget Request	$ 36,972

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

GEOTHERMAL ENERGY

I. Preface: Geothermal Systems

The geothermal industry does not possess the tools needed to reduce the risks associated with large-scale development at new, unproven sites. The proposed program represents a major effort to work cooperatively with industry in developing those tools through initiatives designed to commercialize new technology at an accelerated pace. The primary research goal is to reduce the cost of power generated from moderate-temperature geothermal resources 25 percent by the end of the decade. This goal will be achieved by continuing initiatives that utilize core research on cost-sensitive areas of technology: exploration, reservoir engineering, drilling, and energy conversion. An initiative under the Climate Change Action Plan Market Mobilization program is targeted to increase the total installed generating capacity from geothermal resources to 3,500 megawatts through cost-shared ice-breaker power plants at undeveloped fields. A second initiative under the Action Plan involves an effort to displace at least 1000 megawatts of generating capacity with expanded use of geothermal heat pumps to 1.5 million units by year 2000. The GT-WORLD initiative combines technology improvements in exploration, reservoir management, and energy conversion to aid U.S. industry in penetrating foreign markets. These initiatives emphasize near-term results (by the year 2000) in close partnership with industry on a cost-sharing basis. NADEF, a national, broadly based R&D initiative, will develop an entirely new technology for penetrating rock, thereby making geothermal an inexpensive, readily accessible energy alternative. By employing a strategy that combines applied R&D on priority needs, cooperative working relationships, and timely technology transfer, the Geothermal Energy Program enhances the competitiveness, reliability, and security of the Nation's energy supply.

II. A. Summary Table: Geothermal Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Geothermal Technology Development				
Exploration	$ 2,597	$ 5,977	$ 4,169	$ -1,808
Drilling	3,400	6,267	5,146	-1,121
Reservoir Technology	7,766	8,620	6,647	-1,973
Conversion	6,403	5,090 a/	12,050	6,960
Environment	1,000	9,967	8,118	-1,849
Subtotal, Geothermal Technology Development	$ 21,166	$ 35,921	$ 36,130	$ 209
Program Direction	$ 970	$ 1,000	$ 1,000	$ 0
Capital Equipment	873	886	397	-489
Subtotal, Utility Sector	$ 23,009	$ 37,807 a/	$ 37,527	$ -280
Total, Geothermal Systems	$ 23,009	$ 37,807 a/	$ 37,527	$ -280

a/ The Department has prepared a reprogramming request, which has not yet been approved, for an additional $8,100,000 to support continued research related to the "Kalina Cycle" at the Energy Technology Engineering Center. No funds are included in these totals.

II. B. Laboratory and Facility Funding Table: Geothermal Systems

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Idaho National Engineering Lab	2,400	4,500	2,300	-2,200
Los Alamos National Laboratory	1,250	1,400	1,400	0
National Renewable Energy Lab	680	580	680	100
Sandia National Laboratories	4,315	5,300	4,400	-900
All Other	14,364	26,027	28,747	2,720
Total, Geothermal Systems	$ 23,009	$ 37,807 a/	$ 37,527	$ -280

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Geothermal Systems			
Utility Sector			
Geothermal Technology Development			
Exploration	Tested and verified new integrated exploration methodology in a cost-shared program with industry. Self-potential methods were evaluated by field testing. Two Geothermal Technology Organization (GTO) projects with 51% industry and 49% DOE cost-sharing were completed providing advanced seismic interpretation methods for locating fractures. Developed plans to conduct industry-directed exploration drilling projects with joint funding to identify new resource areas and expand the available geothermal reserves base to 7,500 MWE by the year 2000. (INEL, UURI, USGS, Industry: TBD) ($2,597)	Cost share with industry the application of advanced integrated exploration methodology, such as remote sensing and biogeochemistry, to locate new resources at substantial cost savings. These techniques also reduce the risk in exploration drilling. Cooperate with industry to discover new geothermal fields. (INEL, UURI, Industry Solicitation) ($5,977)	Field test advanced integrated exploration methods with industry in western United States to locate new resources and expand the resource base that is available for clean, geothermal electric power. Additional cost-shared exploration drilling is in Basin and Range and Pacific Northwest. (INEL, UURI, Industry Solicitation) ($4,169)

III. Geothermal Systems (Cont'd):
Utility Sector (Cont'd):
Geothermal Technology Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Exploration (Cont'd)	$2,597	$5,977	$4,169
Drilling	Evaluated and tested new drilling and completion technologies, such as slim-hole coring and acoustic data telemetry. With industry cooperation, developed and field-tested new instruments and lost circulation control techniques (e.g., drillable straddle packer and borehole televiewer). Through the industry-sponsored Geothermal Drilling Organization (GDO), cost-shared (50/50) near-term improvements in drilling technology to accelerate deployment of new instruments and materials most needed by industry. (SNL, Industry) ($3,400)	Design advanced slim-hole drilling system to reduce the cost of exploration wells by 50% to about $1 million each. Initiate development of surface technology for coring rigs and develop high temperature slim-hole bits, drilling fluids and core barrels. Complete testing and evaluation of acoustic telemetry for commercial operation in conjunction with an industry partner. Complete field tests/design changes and transfer drillable straddle packer and borehole televiewer fracture diagnostics technologies to industry. Design and test single cutter synthetic diamond bits, on a 50/50 basis with industry and Fossil Energy. (SNL) ($4,308)	Develop, test, and deploy technologies for attaining target of 35 percent reduction in overall geothermal drilling costs. Continue slim hole drilling and reservoir testing technology development program to reduce geothermal exploration costs. Continue projects for improved hard rock bit designs, borehole instrumentation, and lost circulation control techniques. Conduct cost-shared projects with short-term payoff identified through the GDO. Transfer technologies to industry through existing cost-share partnerships. ($3,646)
	No Activitites. ($0)	INITIATIVE NADET: Begin a new national R&D program in advanced drilling and excavation technologies. Bring together a consortium of stakeholders from industry, academia, and government who share a common need for more economic means of penetrating rock. The National Advanced Drilling and Excavation Technologies (NADET) Program will produce a revolutionary system to access the earth's interior, making geothermal resources economic on a national scale. (Industry TBD, Other Federal Agencies) ($1,959)	Conduct multidisciplinary studies under NADET focused on developing an innovative drilling system that is less expensive, more versatile, safer, less disturbing to the environment, and capable of outperforming current technology. Research will be directed at major drilling system components with the greatest potential for significant advancements, especially self-guided "smart" systems. NADET will reduce drilling costs by at least 50 percent, opening the large geothermal resource base (>1 million quads) to economic development. ($1,500)

III. Geothermal Systems (Cont'd):
Utility Sector (Cont'd):
Geothermal Technology Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Drilling (Cont'd)	$3,400	$6,267	$5,146
Reservoir Technology	Conducted a large injection test at The Geysers to confirm new production strategy. Developed and tested new models and field management methods to aid in conservation of resource. Began a project with local, State, and industrial partners to inject treated effluent into The Geysers field. Incorporated gas control into predictive reservoir model. Instituted major innovations of industry-wide reservoir model to provide for evaluation of different field development strategies. In industry-driven research through the Geothermal Technology Organization (GTO) developed a real-time gas monitoring system for well testing. Used chemical modeling to predict gas interaction with piping and turbines. (INEL, Stanford, UURI, PG&E, GTO Member Companies, Calpine, UCSD, Unocal, NCPA) ($6,466)	Compile and evaluate all previous injection test results and design injection strategy to enhance recharge at The Geysers reservoir. (See Environment: Climate Change Action Plan) With industry, develop methods to integrate gas control technology into production and injection operations. Build on preliminary research to locate and define reservoir conditions for gas accumulation. Cost-share with industry to implement real-time reservoir management using tested and proven reservoir simulators. Through the GTO, deploy portable equipment for downhole scale control testing and verification; investigate scale control at several geothermal fields. (INEL, Stanford, UCSD, UURI, Unocal, PG&E, CCPA, NCPA, Magma Energy, CA Energy, Calpine, GTO Member Companies) ($3,620)	Cost share (50/50 or greater) with industry the development and testing of improved production and injection strategy to enhance field operations in California, Utah, and Nevada. In joint studies, develop with industry improved methodology for 15 percent Improvement of prediction of reservoir production. Implement cost-shared industry selected research with the GTO companies. (INEL, Standford, UURI, Unocal, PG&E, CCPA, NCPA, Calpine, UCSD, CA Energy Co., Magma Energy, GTO Members) ($3,447)
	No Activities. ($0)	INITIATIVE GT-WORLD: Develop plans to apply the latest advances in reservoir technology in conjunction with those in conversion technology to expand international geothermal development. Enhance the competitiveness of U.S. industry to penetrate the expanding international market for geothermal electrical generation by offering full service options to foreign customers. (Various Labs and Industry) ($1,000)	Support applications of advanced technology through GT-WORLD in order to position U.S. industry to penetrate the expanding international market for geothermal electrical generation. (TBD) ($1,000)

III. Geothermal Systems (Cont'd):
Utility Sector (Cont'd):
Geothermal Technology Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reservoir Technology (Cont'd)	Placed Fenton Hill hot dry rock (HDR) site on standby. Continued environmental monitoring and facilities maintenance to ensure environmental, health, and safety requirements are met. Began seeking an industrial partner under the Energy Policy Act (Sections 2501 and 1202) to participate in a joint R&D venture for commercialization purposes. (LANL) ($1,300)	Maintain Fenton Hill site on standby status, pending selection of an industrial partner; if no use for the site can be found, begin site restoration efforts. As necessary, perform monitoring and facilities maintenance. As a means of accelerating the commercialization of HDR technology, issue request for industrial partner to conduct a joint venture HDR demonstration project. (LANL, Industry Solicitation) ($4,000)	If a suitable industrial partner can be found, proceed with joint venture HDR demonstration project. Otherwise the project will be terminated and decommissioning of the Fenton Hill site will be initiated. ($2,200)
	$7,766	$8,620	$6,647
Conversion	Conducted investigations to improve conversion efficiencies and reduce operating costs, including tests of supersaturated hydrocarbon expansions with reaction turbine at Heat Cycle Research Facility. Improved a model for ammonia-water working fluid properties. Conducted laboratory and field tests of materials for brine distribution systems and turbine components. Continued cost-shared efforts on projects with industry to demonstrate the economic benefits of improved electric generators. (BNL, NREL, INEL, Douglas Engineering, Exergy, Inc.) ($5,003)	Conduct cooperative demonstration with industrial partners of supersaturated hydrocarbon expansions at a commercial power plant. Design and build prototype advanced heat rejection system for cooperative field test with industry; laboratory test improved designs for condensing two-component mixtures of hydrocarbons. Test samples of well cements at geothermal well sites; field test new coating materials with joint industry sponsorship at commercial installations. Continue projects to demonstrate the economic benefits of improved electric generators. (BNL, NIST, Exergy, Inc., Douglas Engr., NREL, TBD) ($1,800)	Analyze performance of structured packings in direct contact condensers. Develop technology for small-scale power plants. Field test high temperature well cements and thermally conductive concrete liners to reduce operating and maintenance costs. Complete projects to demonstrate economic benefits of improved electric generators. (BNL, NREL, NIST, Exergy Inc., Douglas Engr.) ($1,655)
	No Activities. ($0)	No Activities. ($0)	Support continuing operations related to research on the "Kalina Cycle" at the Energy Technology Engineering Center. (ETEC) ($8,080)

III. Geothermal Systems (Cont'd):
Utility Sector (Cont'd):
Geothermal Technology Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Conversion (Cont'd)	Conducted brine chemistry studies at selected field sites to develop, validate, and refine brine model parameters. Tested newly constructed bioreactor designed to address downstream waste handling problems. Expanded bioprocess application to include cost-shared research on residual wastes at multiple sites; examined feasibility of integrating waste reduction and mineral extraction schemes. (UCSD, BNL, Industry) ($700)	Apply models at selected field sites to address current scaling and corrosion problems associated with some geothermal operations. In conjunction with industry, design and begin construction of a bioprocess unit to reduce costs associated with disposing of undesirable end products from geothermal operations by as much as 50%. (UCSD, PG&E, Magma Power, Others) ($1,690)	Work with industrial operators to apply brine simulation model to mitigate real-time plant maintenance and operating problems (i.e., scaling, corrosion, gas breakout). Complete construction of bioprocess unit and conduct first cost-shared field tests at one or more industrial geothermal sites. (UCSD, PG&E, Magma Power, Others) ($1,715)
	Supported the direct-heat utilization assistance program aimed at using low-to moderate-temperature geothermal resources; transferred the technology to industry. Initiated designs to reduce costs of installing heat exchangers for commercial geothermal heat pumps (GHPs). Began design of a thermal storage device to shift up to 2KW/per residence from peak period. Began a commercial design manual for ground heat exchangers. (SNL, Oklahoma State University, Oregon Institute of Technology) ($700)	Continue technical assistance and technology transfer for geothermal direct use projects. Evaluate coupling GHPs with thermal storage systems. Provide GHP load data and develop models to enable utilities to compare GHPs with utility load characteristics and other Demand Side Management (DSM) options. Complete commercial design manual. (Oklahoma State University, Oregon Institute of Technology, SNL, Others) ($1,600)	Provide technical assistance and outreach to support continuing growth of geothermal direct use applications. Design residential thermal storage systems for GHPs. (OIT, SNL) ($600)
	$6,403	$5,090	$12,050

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III. Geothermal Systems (Cont'd):
Utility Sector (Cont'd):
Geothermal Technology Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environment	FORMERLY TITLED HYDROTHERMAL SYSTEMS:		
	Using funds obligated in prior fiscal year, completed decommissioning of geopressured wells in compliance with state laws and regulations, and conducted environmental monitoring. Also used current year funds to fulfill requirements for Hawaii Geothermal Project Environmental Impact Statement (Various Labs and Other Federal Agencies) ($1,000)	Environmental compliance activities and restoration of inactive geothermal field sites are unavoidable obligations of completed field tests. Begin restoration of the Heat Cycle Research Facility and Fenton Hill site, if no industrial partner is found; conduct other ES&H efforts, including environmental monitoring. (SNL, Industry, INEL/NREL) ($967)	Environmental compliance activities and restoration of inactive geothermal field sites are unavoidable obligations of completed field tests. Continue site restoration, monitoring, and environmental compliance efforts for selected geothermal projects. (SNL, Industry, INEL/NREL) ($1,118)
	No Activities. ($0)	INITIATIVE CLIMATE CHANGE ACTION PLAN (MARKET MOBILIZATION): Drawing on the accomplishments of existing program elements, begin a cost-shared, aggressive effort to mitigate global warming and stimulate geothermal technology commercialization. Utilities, the geothermal industry, and other stakeholders will collaborate in a leveraged program to accelerate the use of geothermal energy for electric power production and building heating, cooling and water heating. Included under this effort is the Lake County pipeline project in which treated effluent will be injected into The Geysers. The initiative is targeted to increase the total generating capacity from geothermal energy to 4,000 MWe by the year 2000. Geothermal capacity of 4,000 MWe will displace 30 million tons of carbon dioxide annually. In an effort to displace at least 2,000 MWe of generating capacity, carry out a geothermal heat pump market mobilization and technology demonstration program. (Industry Solicitations) ($9,000)	INITIATIVE CLIMATE CHANGE ACTION PLAN (MARKET MOBILIZATION: Continue CCAP geothermal technology market mobilization programs, consistent with EPACT directives (Sections 1204c, 1212, and 211b) and national greenhouse gas reduction objectives. Issue further solicitations, as defined through stakeholder collaboratives, to secure cost-shared greenhouse gas reduction projects and outreach programs for geothermal technologies. Carry out the second year of geothermal heat pump commercialization activities performed through the utility/ industry-led consortium. ($7,000)

III. Geothermal Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environment (Cont'd)	$1,000	$9,967	$8,118
Subtotal, Geothermal Technology Development	$21,166	$35,921	$36,130
Program Direction	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $787 12.1 Civilian personnel benefits $112 21.0 Travel and transportation of persons $71 25.2 Other services $0 Support 15 FTEs. ($970) 15.0 FTE $970	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $804 12.1 Civilian personnel benefits $113 21.0 Travel and transportation of persons $73 25.2 Other services $10 Support 14 FTEs. ($1,000) 14.0 FTE $1,000	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $811 12.1 Civilian personnel benefits $114 21.0 Travel and transportation of persons $75 25.2 Other services $0 Support 14 FTEs. ($1,000) 14.0 FTE $1,000
Capital Equipment	Purchased laboratory apparatus and field test equipment, such as geophysical instruments, to carry out newly designed exploration and slim-hole coring studies. (SNL, INEL, IDO) ($873) $873	Acquire necessary equipment to conduct field studies with industry and supporting laboratory research for exploration, injection, and scale control; construct and instrument a field size bioprocessing unit; and support slim-hole coring system experiments. (INEL, IDO, SNL) ($886) $886	Procure laboratory and production equipment in support of exploration, reservoir, drilling, and conversion projects. (INEL, IDO, SNL) ($397) $397
Subtotal, Utility Sector	15.0 FTE $23,009	14.0 FTE $37,807	14.0 FTE $37,527
Geothermal Systems	15.0 FTE $23,009	14.0 FTE $37,807	14.0 FTE $37,527

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OVERVIEW

HYDROPOWER

With more than 77,000 MW of installed generation capacity, hydropower provides 12 percent of the Nation's electric generating capacity and 90 percent of the electricity produced from renewables. This amounted to an estimated 2.74 quadrillion Btus in 1994 and represents about $6 billion dollars in sales at the wholesale generation level. An increase of 50 percent in hydropower generating capacity is possible through generator improvements and additions at existing dams. Thus an additional 40,000 MW could be realized without construction of new dams or creating of new impoundments.

Hydropower contributes to the Nation's energy security because it is indigenous, abundant, and not subject to interruption or control from outside the United States. It is a source of energy stability because it is renewable. It can provide both baseload and load following capability, with high mechanical and electrical available. Hydropower contributes to air quality goals, including reduction of greenhouse gases from other power plants by displacing emissions from fossil fuels units.

In addition to environmental concerns regarding construction of new dams and impoundments, a major concern with hydropower is relicensing of existing dams as their operating license expires, typically after 50 years. Currently, the Federal Energy Regulatory Commission must provide significantly more consideration to wildlife and recreation uses than when the original license was issued. The trend in such decisions is to reduce the allowable generation capacity or to place conditions on operation that affect power generation. An element of the Hydropower Program is mitigation studies and strategies to allow decision makers to balance alternative uses of water in relicensing. 1600 copies of the Fish passage mitigation study will have been distributed to industry by the end of FY 1995. In addition, DOE is assisting the states in developing realistic hydropower resource assessments, using DOE-developed uniform criteria. Twelve state assessments have been completed, and DOE will be assisting an additional 14 states in FY 1995-1996.

The largest element of the Hydropower Program is the Advanced Hydropower Turbine (AHT) program which was developed in partnership with the National Hydropower Association, the Electric Power Research Institute and interested utilities. The objective of the program is to develop a commercially-viable hydropower turbine incorporating advanced technology and innovative approaches that mitigate environmental impact of hydropower generation. Existing turbine designs can have adverse impacts affecting plant and fish life, such as limiting fish passage for spawning and migration, and damaging fish trapped in the inflow. The AHT program will examine options such as variable speed and variable pitch turbines to accommodate variations in water flow, self-aerating turbines to maintain dissolved oxygen levels, application of durable light-weight cavitation resistant materials, and innovative fish passage strategies and technologies. The program is heavily cost-shared with industry partners. The result of the program should be a U.S. technology available by the turn of the century suitable for domestic and international applications. It is estimated that 200 MW of advanced technology turbines would be operating in the United States by the year 2000, 2000 MW by 2005, and 10,000 MW by 2010, representing markets of $100 million, $1 billion, and $5 billion respectively.

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no growth in FTEs beyond the FY 1995 level despite program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be

achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Hydropower

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Hydropower					
Operating Expenses	$ 1,039 a/	$ 1,500	$ +3,346 c/	$ 4,846	$ 994
Adjustment	-17 b/	0	-16	-16 d/	-14 e/
TOTAL	$ 1,022	$ 1,500	$ 3,330	$ 4,830	$ 980
Summary					
Operating Expenses	$ 1,022	$ 1,500	$ 0	$ 4,830	$ 994
Total Program	$ 1,022	$ 1,500	$ 0	$ 4,830	$ 994
Staffing (FTEs)	1	1	0	1	1

Authorizations:
P.L. 95-620, "Powerplant and Industrial Fuel Use Act of 1978"
P.L. 101-549, "Clean Air Act Amendments of 1990"
P.L. 101-575, "Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990"
P.L. 102-486, "Energy Policy Act of 1992"

a/ Reflects adjustment to Conference Mark of $-4 for M&O Contractor Salary Freeze: $-32 for the FY 1994 Rescission, P.L. 103-211; and $-6 for approved reprogramming 94-R-4 for FY 1994 Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) activities. Total: $-42.

b/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1994 Energy and Water Development Appropriations Act, P.L. 103-126.

c/ Reflects the following adjustments: $-25 for ESR&D General Reductions, $-29 for the Renewable Energy Production Incentive as adjusted for $+3,400 for implementation of the Indian Energy Resource Program as directed in the Energy and Water Conference Report, P.L. 103-672. Total: $+3,346.

d/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1995 Energy and Water Development Appropriation Act, P.L. 103-316.

e/ In support of DOE efforts for prudent management of financial resources, the Office of Energy Efficiency and Renewable Energy is conducting a detailed review of uncosted balances. This is in accordance with the Departmental objective of reducing excessive uncosted balances. Estimates of approximately $6 million have been identified and the savings have been applied pro-rata as an offset to the FY 1996 budget. Once the review is completed, adjustments will be made to reflect actual savings. Pro-rata amount for Hydropower is $-14.

SUMMARY OF CHANGES

Hydropower

FY 1995 Appropriation	$ 1,500
- Adjustment -	+3,346
FY 1995 Adjusted	$ 4,846
- Transfer -	0
FY 1995 Comparable	$ 4,846

Hydropower

- Hydropower Development - Reduces advanced hydro turbine activities and no funds requested for hydroelectric project at Iliamna	-3,852
Subtotal, Hydropower	$ 994
Adjustment	$ -14
FY 1996 Congressional Budget Request	$ 980

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

HYDROPOWER

I. Preface: Hydropower

The Nation has a considerable amount of unused hydropower capacity that can provide both baseload and peaking electricity for the utility sector, with high availability and without contributing to acid rain or greenhouse gases. Hydropower technology is generally well developed, but environmental issues require innovative turbine designs which minimize impacts on the aquatic ecosystem. Based on Federal Energy Regulatory Commission (FERC) data, estimates for adding new capacity at existing dams range up to 24,000 MW. In addition, estimates for retrofitting facilities by upgrading equipment and improving efficiency at existing hydroelectric dams add up to 16,000 MW. The goal of ensuring an adequate, reliable electricity supply at competitive prices, while recognizing environmental costs, will be pursued by providing innovative technology in order to resolve environmental impediments to allow industry to exploit the remaining available hydropower resources. The program emphasizes activities identified by the industry as critical needs and where costs are shared with the private sector. Specifically, using competitive cost-shared contracts, the program is focused on the development of advanced hydropower turbine technology which will be environmentally friendly and balance environmental, technical and cost considerations.

II. A. Summary Table: Hydropower

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Hydropower Development	$ 908	$ 4,756	$ 904	$ -3,852
Program Direction	131	90	90	0
Subtotal, Utility Sector	$ 1,039	$ 4,846	$ 994	$ -3,852
Total, Hydropower	$ 1,039	$ 4,846	$ 994	$ -3,852

II. B. Laboratory and Facility Funding Table: Hydropower

Idaho National Engineering Lab	$ 500	$ 450	$ 750	$ 300
Oak Ridge National Lab	300	50	50	0
All Other	239	4,346	194	-4,152
Total, Hydropower	$ 1,039	$ 4,846	$ 994	$ -3,852

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Hydropower			
Utility Sector			
Hydropower Development	Complete environmental mitigation studies dealing with fish passage and protection. Continue monitoring and assessment activities, including resource assessment activities with states, through the DOE support offices. Explore, with industry, interest in a cost-shared program to develop advanced, "environmentally friendly" hydro turbines. (INEL, ORNL) ($908)	Continue monitoring and assessment activities, including resource assessment activities with states, through the DOE support offices. Continue work in support of Climate Change Action Plan to remove institutional barrier to increase generation from hydroelectric facilities. Initiate, with industry and utilities, a cost-shared program to develop advanced, "environmentally friendly" hydro turbines. (INEL, ORNL, TBD) ($1,356)	Continue cost-shared program to develop advanced, "environmentally friendly" hydro turbines with industry and utilities. Continue monitoring and assessment activities, including resource assessment activities with States through the DOE support offices. (INEL, ORNL, TBD) ($904)
	No Activities. ($0)	Support construction of the Tazimina hydroelectric project near Iliamna, Alaska. This will be a 700 kW run-of-the-river facility and will be cost-shared on at least a 50/50 basis with the State of Alaska. ($3,400)	No Activities. ($0)
	$908	$4,756	$904

III. Hydropower (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $76 12.1 Civilian personnel benefits $10 21.0 Travel and transportation of persons $0 25.2 Other services $45 Support 1 FTE. ($131)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $79 12.1 Civilian personnel benefits $11 21.0 Travel and transportation of persons $0 25.2 Other services $0 Support 1 FTE. ($90)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $79 12.1 Civilian personnel benefits $11 21.0 Travel and transportation of persons $0 25.2 Other services $0 Support 1 FTE. ($90)
	1.0 FTE $131	1.0 FTE $90	1.0 FTE $90
Subtotal, Utility Sector	1.0 FTE $1,039	1.0 FTE $4,846	1.0 FTE $994
Hydropower	1.0 FTE $1,039	1.0 FTE $4,846	1.0 FTE $994

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OVERVIEW

HYDROGEN RESEARCH AND DEVELOPMENT

The Hydrogen Research and Development Program was established to encourage and support the development of practical and cost competitive hydrogen technologies and systems to meet large-scale energy market needs. This program will develop and demonstrate the processes and technologies needed to produce, store, transport and utilize hydrogen for all energy sectors. The Hydrogen Program follows a technology development strategy focused on long-term applications in large-scale energy markets using renewable hydrogen. The Program also seeks to foster new, near-term markets using the existing fossil infrastructure as the starting point. The Program will accomplish this by pursuing with industry, carefully selected cost-shared demonstrations to illustrate and/or develop commercial opportunities in the near- and mid-term and in large scale markets. These technology development activities are coupled with strong industrial and educational outreach efforts to encourage industry commitment and leadership.

In FY 1995, efforts will be expanded to include four industry led cost-shared projects focused on improved production technologies which will be used to stimulate market acceptance and penetration. In addition, the core program to develop the high-risk, long-term renewable production technologies will be continued. Critical equipment will be purchased to characterize materials and processes needed for the core program. The FY 1996 request continues the implementation of this plan.

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no growth in FTEs beyond the FY 1995 level despite program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Hydrogen Research and Development

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Hydrogen Research and Development					
Operating Expenses	$ 9,590	$ 10,000	$ -608	$ 9,392	$ 7,444
Capital Equipment	0	0	+224 c/	224	0
Subtotal, Hydrogen	$ 9,590 a/	$ 10,000	$ -384 d/	$ 9,616	$ 7,444
Adjustment	-180 b/	0	-116	-116 e/	-110 f/
TOTAL	$ 9,410	$ 10,000	$ -500	$ 9,500	$ 7,334
Summary					
Operating Expenses	$ 9,410	$ 10,000	$ 0	$ 9,276	$ 7,444
Capital Equipment	0	0	0	224	0
Total Program	$ 9,410	$ 10,000	$ 0	$ 9,500	$ 7,444
Staffing (FTEs)	0	0	0	0	0

Authorizations:
P.L. 93-577, "Federal Nonnuclear Energy Research and Development Act of 1974"
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 95-619, "National Energy Conservation Policy Act" (NECPA) (1978)
P.L. 100-697, "National Superconductivity and Competitiveness Act of 1988"
P.L. 102-486, "Energy Policy Act of 1992"

a/ Reflects adjustment to Conference Mark of $-49 for M&O Contractor Salary Freeze: $-296 for the FY 1994 Rescission, P.L. 103-211; and $-65 for approved reprogramming 94-R-4 for FY 1994 Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) activities. Total: $-410.
b/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1994 Energy and Water Development Appropriations Act, P.L. 103-126.
c/ Reflects internal adjustment to provide capital equipment funding to explore expanded workscope into renewable production methods as directed by Congress.
d/ Reflects the following adjustments: $-176 for ESR&D General Reduction and $-208 for Renewable Energy Production Incentive. Total: $-384.
e/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1995 Energy and Water Development Appropriation Act, P.L. 103-316.
f/ In support of DOE efforts for prudent management of financial resources, the Office of Energy Efficiency and Renewable Energy is conducting a detailed review of uncosted balances. This is in accordance with the Departmental objective of reducing excessive uncosted balances. Estimates of approximately $6 million have been identified and the savings have been applied pro-rata as an offset to the FY 1996 budget. Once the review is completed, adjustments will be made to reflect actual savings. Pro-rata amount for Hydrogen Research and Development is $-110.

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(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Hydrogen Research and Development

FY 1995 Appropriation	$ 10,000
- Adjustment -	-384
FY 1995 Adjusted	$ 9,616
- Transfer -	0
FY 1995 Comparable	$ 9,616
Hydrogen Research and Development	
- Hydrogen Research - Stretch out industrial R&D activities in natural gas reforming	-2,172
Subtotal Hydrogen Research and Development	$ 7,444
Adjustment	$ -110
FY 1996 Congressional Budget Request	$ 7,334

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

HYDROGEN RESEARCH AND DEVELOPMENT

I. Preface: Hydrogen Research and Development

The Hydrogen Research and Development Program supports research to expand energy supply options; to develop technologies for the safe and economical use of hydrogen; to increase market applications; and to demonstrate the processes and technologies needed to produce, store, transport, and use hydrogen. The energy savings and carbon emissions impacts are aligned with the Program's goals of displacing 10 quads of energy by the year 2030 with hydrogen produced from renewable resources. Target markets for hydrogen include vehicles, industrial markets (petroleum refining and fertilizer), and electric utilities (peak and intermediate power production). The total net energy savings and carbon emission reductions increase from <0.01 to 10.8 quads and 2.1 to 194.9 millions of tons equivalent per year (MMTE/yr), respectively. In addition to carbon emission savings, reductions of air pollutants were estimated, such as volatile organic compounds (VOCs), carbon monoxide (CO), and oxides of nitrogen (NOx). The reduction in emissions of CO are largest (>2,000,000 tons per year (tpy) by 2030), owing to the substantial savings achievable in the transportation sector through the replacement of conventional vehicles. Oxides of nitrogen reductions (>300,000 tpy by 2030) and VOC reductions (>200,000 tpy by 2030) are derived from the use of hydrogen in the transportation and electric utility sectors.

The results of costs/benefit analysis indicate that significant savings can arise in the long-term as hydrogen is integrated into the energy sector. As not only the cost of producing hydrogen decreases in the post-2010 period, but also the cost of hydrogen-consuming technologies drop, the direct monetary benefits increase sharply over time, as indicated by the $87 billion (1995 dollars) in annual fuel savings estimated for the year 2030. (Quality Metrics Analysis Report/NREL; part of DOE/OUT Quality Metrics Assessment, 1994)

The FY 1996 Program will further support development of critical technologies (production, storage and utilization) necessary for the introduction of hydrogen derived from fossil fuels for near and mid-term energy markets. The Program will include cost-shared projects to develop small scale advanced reformers (up to one million cubic feet per day) for the conversion of natural gas to hydrogen; in FY 1996 the feasibility of a small scale reformer will be demonstrated. A level of 25 percent of cost sharing is anticipated for FY 1996 as a result of new starts planned for FY 1995.

Performance Measures:

- By 2005, the use of hydrogen will be increased from 0.3Q/yr as a chemical feedstock to produce reformulated gasoline to 0.6Q/yr to be used as a transportation fuel and chemical feedstock (the equivalent of 54 million barrels of oil).

- By 2010, 25% of the new vehicles sold in the U.S. will be hydrogen powered, either as hybrids or as fuel-cell vehicles.

- By 2010, deployment of new production technologies will reduce emissions by: 61,000 tons per year NOx, 1,000,000 tons per year CO, and 46 million tons per year CO2.

- By 2010, the use of biomass and municipal solid waste gasification will capture the equivalent of 0.2Q/yr production capacity of hydrogen.

- By 2025, the use of renewable energy source hydrogen production will capture the equivalent of 10.0Q/yr in the energy market.

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II. A. Summary Table: Hydrogen Research and Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Hydrogen Research	$ 9,590	$ 9,392	$ 7,444	$ -1,948
Capital Equipment	0	224	0	-224
Subtotal, Utility Sector	$ 9,590	$ 9,616	$ 7,444	$ -2,172
Total, Hydrogen Research and Development	$ 9,590	$ 9,616	$ 7,444	$ -2,172

II. B. Laboratory and Facility Funding Table: Hydrogen Research and Development

Brookhaven National Lab	$ 0	$ 100	$ 0	$ -100
Lawrence Livermore National Lab	950	1,000	500	-500
Los Alamos National Laboratory	350	350	350	0
National Renewable Energy Lab	3,303	2,200	1,900	-300
Oak Ridge National Lab	400	200	200	0
Sandia National Laboratories	1,500	1,500	1,500	0
All Other	3,087	4,266	2,994	-1,272
Total, Hydrogen Research and Development	$ 9,590	$ 9,616	$ 7,444	$ -2,172

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Hydrogen Research and Development			
Utility Sector			
Hydrogen Research	The hydrogen program focuses on critical research and development activities that can make significant contributions to the development of competitive hydrogen energy systems which are capable of supplying quads of hydrogen for a variety of long-term fuel applications. The development of direct production methods and storage technologies were assigned the highest priorities in the Department's comprehensive Hydrogen Multi-year Plan, required by the Matsunaga Act, P.L. 101-566. The program will support selected direct production approaches, such as photoelectrochemical and photobiological techniques and high-density energy storage concepts. Additional analysis of promising hydrogen pathways continue. (NREL, LLNL, ORNL, SNL) ($5,180)	The hydrogen program supports all critical technology development activities necessary for the realization of hydrogen energy system in the twenty-first century. Technology development activities consist of core research to develop hydrogen production, storage, and associated technologies and systems analysis, and to evaluate promising hydrogen energy pathways to identify their critical component technologies. The expanded hydrogen program will provide the future critical hydrogen technologies, including production from renewable sources and energy storage, necessary to conduct demonstrations specified in the Matsunaga Act and supplemented by EPACT Title XXI, Section 2026. Continue to support promising direct hydrogen production approaches based upon amorphous and crystalline semi-conductor-based photoelectrochemical cells and photobiological techniques. (NREL, LLNL, ORNL) ($2,700)	Continue R&D on critical component technologies including Hydrogen production from renewable sources and hydrogen storage necessary to conduct demonstrations specified in the Matsunaga Act and supplemented by the EPAct, Section 2026. Support promising direct hydrogen production approaches based upon amorphous and crystalline semi-conductor-based photoelectrochemical cells and photobiological techniques. (NREL, LLNL, ORNL) ($2,957)
	Implement Title XX/Section 2026 of EPACT, which requires the Secretary to conduct a five-year program on renewable hydrogen energy systems in accordance with the Matsunaga Act. Initiate collaborative projects with industry to test and evaluate the production of hydrogen from a renewable energy source and to assess the feasibility of modifying existing natural gas pipelines to transport hydrogen and natural gas mixtures. The projects will make significant	Continue collaborative industry/laboratory efforts to develop advanced hydrogen storage concepts for mobile and stationary application and to test and evaluate the production of hydrogen from renewable energy sources. Initiate collaborative R&D projects with industry to develop advanced natural gas reformer. Successful completion of these collaborative projects will provide critical technologies necessary for the development of hydrogen energy systems.	Stretch out collaborative industry/laboratory efforts to develop near-term advanced natural gas reforming and storage systems applicable for mobile and stationary applications. Increase activities in the development of long-range core projects in renewable production technologies specified by EPACT, Section 2026. (NREL, LLNL, LANL, ORNL, SNL) ($3,887)

III. Hydrogen Research and Development (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hydrogen Research (Cont'd)	contributions to the development of competitive hydrogen energy systems. (EPACT Section 2026) (NREL, LLNL, LANL, ORNL, SNL) ($3,410)	(EPACT Section 2026) (NREL, LLNL, LANL, ORNL, SNL) ($5,492)	
	Initiate comprehensive analytical activities to identify all costs and benefits of advanced hydrogen systems compared to current energy technologies. (NREL, LLNL) ($1,000)	Support analytical activities to identify the most promising demonstrations for determining market readiness of critical hydrogen technologies. (NREL, LLNL) ($1,200)	Support analytical activities to define cost goals for various technologies, determine market opportunities, and quality metrics for the program recommended by the Hydrogen Technical Advisory Panel. (NREL, LLNL) ($600)
	$9,590	$9,392	$7,444
Capital Equipment	No Activities. ($0)	Provide capital funds to characterize photobiological experiments, measure surface area of carbon nanostructures, synthesize gallium indium phosphide, and measure metals content of biological materials at parts per-billion level to support platinization. (NREL) ($224)	No Activities. ($0)
	$0	$224	$0
Subtotal, Utility Sector	$9,590	$9,616	$7,444
Hydrogen Research and Development	$9,590	$9,616	$7,444

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ELECTRIC ENERGY SYSTEMS

INTRODUCTION

Changes affecting the Nation's electric energy system (EES) are adding new urgency to DOE's program priorities. Increasing competition at the wholesale level facilitated by the Energy Policy Act of 1992; increasing consumer demands for an expanding array of energy services; and increasing difficulty in siting, operating and upgrading utility facilities are together causing the electric system to operate closer to capacity limits. This results in added emphasis on controllability of the Transmission and Distribution (T&D) system as a means of increasing network flexibility while maintaining reliability. At the same time a growing economy will require new capacity. The Energy Information Administration (EIA) in its Annual Energy Outlook for 1995 projects that the growth in demand for electricity, coupled with anticipated plant retirements, will require approximately 150 Gigawatts (GW) of new capacity over 1993 at a cost approaching $150 billion. In 1992, the total U.S. utility generating capacity was 696 GW.

In addition to the need for new generation capacity, electricity demand growth also results in increased need for transmission and distribution facilities. For the first time in 1990 (and in each year thereafter), utilities have made larger capital investments in T&D than in generating capacity. While this reflects a willingness by utilities to consider alternatives to traditional supply technologies (such as demand reduction, cogeneration, and third-party generation), it also reflects a significant escalation in the cost of installing required T&D facilities. These costs result from greater local code restrictions, limits caused by new state legislation, a growing NIMBY (not-in-my-back-yard) attitude, and a substantial rise in objections due to concerns about possible health effects from electric and magnetic fields. In a growing number of cases, these same factors have begun to prevent the installation of needed electric lines, requiring utilities to forego desirable power transfers or incur system inefficiencies.

Finally, electric utilities are seeking approaches to respond to increased demand for higher quality electricity, i.e., electric energy delivered without interruption (including fractional second intermittencies) and without distortions in wave form or significant variations in voltage. Demand for improved electric service has resulted from increased industrial process automation where electricity disruption causes upset in continuous manufacturing processes or out-of-specification products in computer controlled production lines. This new attention to power quality is primarily a result of the utility industry's recognition that their customers lose $18 billion annually in productivity due to problems with electric service.

The EES Program, following the legislative and policy directives of EPACT and other enabling legislation, collaborates with utilities, industry and the public sector to develop and facilitate the adoption of advanced technologies to improve the reliability, flexibility, capacity and efficiency of utility energy delivery systems. The program also performs research regarding the health and safety of electric and magnetic fields and communicates the findings to regulators and the public. Through new technology development, the EES program helps the utility sector to appropriate, and to obtain maximum benefits from energy efficiency measures, while simultaneously achieving fuller utilization of existing assets and enabling delivery of new customer services. Such Federal investments serve the national interest since they benefit all electricity consumers.

The EES Program has resulted in a number of technology developments and improvements. These include:

-- Establishing partnerships with utilities to demonstrate advanced wide area data acquisition systems that will lead to a new generation of automated adaptive network controls, capable of maintaining grid stability at higher power throughputs.

-- Collaborating with industry to demonstrate advanced transmission configurations capable of increasing corridor power transfer capacity without increased EMF.

-- Establishing the Superconductivity Partnership Initiatives to accelerate the commercialization of high-temperature superconductivity (HTS)-based electric power products offering increased efficiency in utility sector operations, and

-- Expanding and accelerating the National EMF Research and Communications program in partnership with the National Institute of Environmental Health Sciences to expeditiously address the public's concern over EMF issues.

GOALS

The goal of the Electric Energy System program is to ensure, in cooperation with industry, availability of the advances transmission, distribution, and end-use technologies, needed to meet these future energy requirements. To achieve this goal, the EES program emphasizes the following work areas: (1) developing new and innovative energy delivery and control technologies; (2) developing high temperature superconducting power products and incorporating these into systems for utility applications (e.g., motors, generators, power transmission lines, current limiters, and magnetic energy storage systems), and (3) determining the potential for health risk from exposure to electric and magnetic fields, and developing mitigation technologies and techniques to minimize EMF impacts.

STRATEGY

The EES program will work with other DOE programs, national laboratories, and other Federal agencies in coordination with industrial partners, including the Electric Power Research Institute (EPRI), manufacturers, universities and utilities to achieve program goals. These collaborative R&D activities will be pursued by the three EES program areas:

-- T&D: Overall direction of the T&D program will be coordinated with industry through an industry steering committee. The program will conduct research at national laboratories, universities, utilities and manufacturers aimed at developing advanced sensing, communications and automated information processing technologies, including artificial intelligence applications to automate control of the power grid. The program will also develop, through collaboratives with manufacturers, advanced power electronics based high capacity transmission options.

-- EMF: The EMF Program will work with the National Institute of Environmental Health Sciences (NIEHS) to further the program objectives outlined in the multi-agency national plan. In keeping with the requirements of EPACT, the program will conduct EMF biological and engineering research at national laboratories and universities aimed at resolving public concerns associated with the environmental and occupational exposures to power frequency fields. A coordinated, multi-laboratory replication program will be conducted to identify key reproducible biological effects. All program results will be made widely available through an active program of public information dissemination.

-- Superconductivity: The superconductivity program will support US efforts to exploit the predicted enormous economic and energy potential of high temperature superconductivity through two parallel program elements: (1) promote accelerated deployment through the Superconductivity Partnership Initiative which provides financial assistance (through heavily cost shared Cooperative Agreements) to industrial consortia performing product development, motor, generator, transmission cable and current limiter projects; and (2) support a core R&D effort to provide U.S. companies with the technology base needed for successful commercialization.

PERFORMANCE MEASURES

-- The T&D program is longer-range: developing and adapting advanced communications; computing; sensing and controlling technology applications to electric power systems to avoid capital expenditures; saving energy; and enabling integration of renewable technologies, storage and energy efficiency measures on future systems. This work anticipates system expansion needs in this decade and installation of dispersed resources which are now being developed.

-- Guided by industry advisors, the T&D program is developing flexible systems, using advanced technologies, that are likely to

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address critical future system requirements.

-- Reduces the uncertainty surrounding issue of the human health risk from exposure to EMF.

-- Increases the number of public information documents published and distributed.

-- Increases the use and advertises the availability of the EMF Infoline.

-- Increases the number of research sponsors sending researchers to the EMF Annual review.

-- Increases the number of population groups with Comprehensive EMF exposure assessed.

-- Increases the number and type of environments where EMF exposure is fully characterized.

-- Increases the number and type of EMF sources that are fully characterized.

-- Will obtain all non-Federal matching funds earlier in the fiscal year.

-- Will obtain commitments for the entire $32.6 million needed over the EMF RAPID program life.

-- Decrease the percentage of EMF RAPID Program funds spent on administrative expenses.

FY 1996 BUDGET REQUEST

The FY 1996 budget request for Electric Energy Systems continues key research and development activities in the three EES program areas.

STREAMLINING AND RESTRUCTURING INITIATIVES

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no growth in FTEs beyond the FY 1995 level despite program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Electric Energy Systems

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Electric Energy Systems					
Operating Expenses	$ 36,137	$ 40,050	$ -1,506	$ 38,544	$ 41,639
Capital Equipment	873	0	0	0	0
Subtotal, Electric Energy Systems	$ 37,010 a/	$ 40,050	$ -1,506 c/	$ 38,544	$ 41,639
Adjustment	$ -679 b/	$ 0	$ -456	$ -456 d/	$ -615 e/
TOTAL	$ 36,331	$ 40,050	$ -1,962	$ 38,088	$ 41,024
Summary					
Operating Expenses	$ 35,474	$ 40,050	$ 0	$ 38,088	$ 41,639
Capital Equipment	857	0	0	0	0
Total Program	$ 36,331	$ 40,050	$ 0	$ 38,088	$ 41,639
Staffing (FTEs)	9	10	0	10	10

Authorizations:
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 95-590, "Solar Photovoltaic Energy Research, Development and Demonstration Act of 1978"
P.L. 95-619, "National Energy Conservation Policy Act" (NECPA) (1978)
P.L. 102-486, "Energy Policy Act of 1992"
P.L. 93-577, "Federal Nonnuclear Energy Research and Development Act of 1974"

a/ Reflects adjustment to Conference Mark of $-182 for M&O Contractor Salary Freeze: $-1,144 for the FY 1994 Rescission, P.L. 103-211; and $-244 for approved reprogramming 94-R-4 for FY 1994 Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) activities. Total: $-1,570.

b/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1994 Energy and Water Development Appropriations Act, P.L. 103-126.

c/ Reflects following adjustment of $-691 for ESR&D general reductions and $-815 for the Renewable Energy Production Incentive. Total: $-1,506.

d/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1995 Energy and Water Development Appropriation Act, P.L. 103-316.

e/ In support of DOE efforts for prudent management of financial resources, the Office of Energy Efficiency and Renewable Energy is conducting a detailed review of uncosted balances. This is in accordance with the Departmental objective of reducing excessive uncosted balances. Estimates of approximately $6 million have been identified and the savings have been applied pro-rata as an offset to the FY 1996 budget. Once the review is completed, adjustments will be made to reflect actual savings. Pro-rata amount for Electric Energy Systems is $-615.

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Electric Energy Systems

FY 1995 Appropriation	$ 40,050
- Adjustment -	-1,506
FY 1995 Adjusted	$ 38,544
- Transfer -	0
FY 1995 Comparable	$ 38,544
Electric Energy Systems	
- Electric Field Effects (EMF) - Reduce EMF health effects research, development and public information dissemination program	-3,538
- Reliability Research (T&D) -	+191
- Materials -	+700
- Devices and Systems - Accelerate development of high field, high temperature superconducting magnets	+5,742
Subtotal Electric Energy Systems	$ 41,639
Adjustment	$ -615
FY 1996 Congressional Budget Request	$ 41,024

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ELECTRIC ENERGY SYSTEMS

I. Preface: Electric Energy Systems

The Electric Energy Systems program element consists of: Electric Field Effects (EMF), Reliability Research (R&D on advanced Transmission and Distribution (T&D) technologies), and Systems and Materials Research (R&D concentrated solely on high-temperature superconductivity). The major activities are presented in terms of their relationship to the four elements of the U.S. electricity system: generation, transmission, distribution, and end use. For FY 1996 cost sharing for these activities is estimated at more than one dollar for every two dollars of federal funds.

There has been increasing public concern and media attention about the issue of whether or not exposure to power frequency electric and magnetic fields (EMF) results in adverse health effects. This issue is affecting both personal and public decisions concerning the siting, design and use of electric transmission and distribution systems, electrical equipment, and consumer products. With its concern for the safe, reliable, and economic supply, delivery and use of electricity, DOE has supported an EMF Biological Mechanisms Research program for many years. A significant amount of our current scientific knowledge on this issue and the focus for the present research have been some of the results of this program. Since this program is a key component of a coordinated national research effort to address the public's concern, funding is requested in FY 1996 to continue this focused research. A reduced level of funding is also requested to continue the EMF Research and Public Information Dissemination (RAPID) Program, which was established by the Energy Policy Act of 1992. The RAPID program is another key component of the coordinated research effort and uses results from the EMF Biological Mechanisms Research Program and other research programs for its risk assessment and public information dissemination efforts. The primary goal of the EMF programs is to determine if there is a human health risk from exposure to fields associated with the generation, delivery and use of electricity. If a health risk is determined, a subsequent goal is to develop information on types and levels of exposures and field management options, so that effective mitigation actions can be implemented.

The Reliability Research (Transmission and Distribution) element is focused on developing those advanced technologies that can: (1) enable the existing transmission system to safely and efficiently carry greater loads and reduce the need for costly and difficult to site new transmission lines, (2) provide increased capacity, asset utilization, and flexibility in transmission and distribution systems through real-time systems control technology, and (3) provide full integration of the diverse spectrum of utility resources including renewable energy, energy storage, and advanced energy efficiency technologies. These advanced technologies are strategic requirements to meet increasing consumer demand for electricity and additional customer services, such as custom power quality, and to ensure the efficient and reliable delivery of electricity in an increasingly diverse and competitive utility sector environment. Advanced technologies can significantly reduce the cost, and increase the application of high voltage DC (direct current) transmission lines, which can more than double power flows over new or existing transmission corridors, increase regional wholesale power transfers, and significantly improve system operation. In FY 1996, the evaluation of a new voltage source converter will be completed. Improved (real-time) control and communications capabilities will allow the system to operate more efficiently and closer to its capacity limits, thereby reducing the amount of new generation, transmission and distribution facilities required for reliable operation. In FY 1996, the development of algorithms for automated control of distribution and transmission systems using Artificial Intelligence techniques will be completed. Integration technologies coupled with real-time system control technologies will allow the full utilization of emerging resources such as renewable energy, dispersed energy storage, and advanced energy efficiency technologies, while maintaining system reliability and safety.

The Systems and Materials Research element has made major progress toward achieving practical high-temperature superconductivity (HTS), which has been identified as a national critical technology by the Department of Commerce. This is the major Federal program for HTS electric power applications. HTS products could play a huge role in future electricity transmission, generation, distribution, and end use. The program's goal is to assist private industry in developing products such as advanced transmission cables, generators, motors, magnetic storage, and bearings. There will be a new emphasis in the accelerated development of high field, high temperature superconductivity magnets, which will enable a wide

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I. Electric Energy Systems (Cont'd)

range of industrial and scientific uses. Replacement of only conventional large motors (over 125 hp) with superconducting motors has been projected to save half a quad of energy per year. These goals are being addressed through national laboratory/private sector CRADAs to establish the necessary technology (primarily HTS wires with adequate electric current capacity) at U.S. manufacturers. In parallel, the Department is collaborating with industry through its Superconductivity Partnership Initiative to accelerate the commercialization of specific electric power products. Four vertically integrated company teams (typically a HTS component supplier, a manufacturer, and a potential product user) have received these Cooperative Agreement awards as a result of a competition. The projects include development of large motors and generators with 50 percent less losses compared to conventional units, underground cables with at least double the transmission capacity of current technology and fault-current limiters which provide new technology for greater system reliability. Associated national laboratory tasks proposed by the private teams are separately funded and carried out under CRADAs as part of the Superconductivity Partnership Initiative.

The 1992 Energy Policy Act specifies both program thrusts (the CRADA technology and the Partnership Initiative product development) which have positioned U.S. companies to exploit the several billion dollars per year international market predicted for these products when technical and economic requirements are met. World market forecasts by the Department of Commerce and others estimate total superconductivity products sales of $8 billion in the year 2000, growing to $150 billion in the year 2020. Wire-using products (addressed by the program) account for half of forecasted sales.

II. A. Summary Table: Electric Energy Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Electric Field Effects (EMF)	$ 9,589	$ 13,462	$ 9,924	$ -3,538
Reliability Research (T&D)	5,848	5,962	6,153	191
Systems and Materials Research (HTS)				
Materials	3,022	3,270	3,970	700
Devices and Systems	16,853	15,000 a/	20,742	5,742
Subtotal, Systems and Materials Research (HTS)	$ 19,875	$ 18,270 a/	$ 24,712	$ 6,442
Systems and Materials Research				
Subtotal, Systems and Materials Research	$ 0	$ 0	$ 0	$ 0
Program Direction	$ 825	$ 850	$ 850	$ 0
Capital Equipment	873	0	0	0
Subtotal, Utility Sector	$ 37,010	$ 38,544	$ 41,639	$ 3,095
Total, Electric Energy Systems	$ 37,010	$ 38,544	$ 41,639	$ 3,095

a/ The Department has prepared a reprogramming request, which has not yet been approved, for an additional $4,000,000 for activities at the University of Tennessee Space Institute to accelerate the development of high-field, high temperature superconducting magnets. No funds are included in these totals.

II. B. Laboratory and Facility Funding Table: Electric Energy Systems

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 4,613	$ 4,350	$ 4,000	$ -350
Brookhaven National Lab	606	625	500	-125
Lawrence Berkeley Lab	200	250	250	0
Los Alamos National Laboratory	4,171	3,900	3,500	-400
National Renewable Energy Lab	884	750	600	-150
Oak Ridge National Lab	12,483	13,100	18,263	5,163
Pacific Northwest Lab	2,097	950	600	-350
Sandia National Laboratories	1,497	900	1,000	100
All Other	10,459	13,719	12,926	-793
Total, Electric Energy Systems	$ 37,010	$ 38,544	$ 41,639	$ 3,095

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Electric Energy Systems			
Utility Sector			
Electric Field Effects (EMF)	Public concern about exposure to EMF causing potential health effects has continued to affect decisions concerning the transmission and distribution of electricity, as well as equipment that uses electricity. To address the public's concern, expand and accelerate research efforts through the implementation of the EMF Research and Public Information Dissemination (RAPID) Program in conformance with Section 2118 of the Energy Policy Act. Solicit a non-Federal contribution from utilities, industry, and the States that is at least equal to the appropriation for the expanded Section 2118 activities. ($0)	An expanded comprehensive research effort will continue in order to reduce the level of uncertainty concerning possible health effects from electric and magnetic fields (EMF). The results of the health research efforts and those from the DOE EMF Biological Mechanisms Research will provide the basis for EMF risk assessment. Solicit a non-Federal contribution from utilities, industry, and the States that is at least equal to the appropriation for the expanded Section 2118 activities. ($0)	A nationally coordinated research effort has been established and will continue in order to determine if EMF exposure results in adverse health effects. Solicit non-Federal contributions to at least match the appropriation for the EMF RAPID program. ($0)

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III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Electric Field Effects (EMF) (Cont'd)	In coordination with the National Institute of Environmental Health Sciences (NIEHS), support continued research focused on effects at the cell, tissue, whole animal, and human levels. Under Section 2118 of EPACT, support NIEHS-directed health effects research. (ANL, LBL, ORNL, PNL) ($5,309)	Continue coordinated research program on biological effects of EMF to explain or exclude the existence of potential health effects focused on effects at the cell, tissue, whole animal, and human levels. Provide funding for National EMF Research and Public Information Dissemination (RAPID) Program authorized under EPACT 92. Health Effects Research and Communication to be directed by NIEHS. (Engineering research to be directed by DOE.) Funds will be matched by private sector. (ANL, LBL, ORNL, PNL) ($11,762)	Continue coordinated research on the biological effects of EMF at the cellular, tissue, animal and human levels. Areas of study will include cellular changes, hormonal effects, tumor promotion and immune system studies, and neuro-endocrine effects. Evaluate dosimetric relationships between external and internal fields, and provide quality control for these research projects. Provide funding for complementary health effects research directed by NIEHS and for NIEHS to develop and apply risk assessment procedures. (ANL, LBL, ORNL, PNL) ($8,324)
	Implement engineering activities to: (1) assess public and worker exposures to EMF, (2) measure/estimate EMF levels from various sources based on distance from the source, (3) develop advanced instrumentation and techniques for EMF measurements, and (4) develop methods that relate EMF exposures outside the body to EMF doses that biologic systems experience inside the body. (ORNL) ($3,780)	Continue engineering activities to: (1) further assess public and worker exposures to EMF, (2) measure/estimate EMF levels from occupational sources, (3) develop and assess EMF management options, (4) develop advanced instrumentation and techniques for EMF measurements, and (5) refine methods that relate EMF exposures outside the body to EMF doses that biological systems experience inside the body. (ORNL) ($1,000)	Continue EMF RAPID program engineering research and development activities including human exposure assessments for various population groups, the development of an exposure prediction model, environmental field measurement surveys, source characterizations, source modeling, the continued development of an EMF measurement database, and the evaluation of field management options. Initiate the development of new field management strategies and the development of an EMF instrument evaluation procedure. (ORNL) ($1,200)

III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Electric Field Effects (EMF) (Cont'd)	Support information dissemination by NIEHS to the public concerning possible health effects from electric and magnetic fields. Include communication regarding types and extents of human exposures, technologies to measure and characterize fields, and methods to assess and manage exposures. Provide information to decision makers. (ORNL) ($500)	Support updated information dissemination to the public concerning possible health effects from electric and magnetic fields. Include updated communication regarding types and extent of human exposures, technologies to measure and characterize fields, and methods to assess and manage exposures. Provide information to decision makers. (ORNL) ($700)	Continue to support the EMF RAPID Program Biomedical Science and Engineering Information Clearinghouse (NIEHS), and the EMF Infoline (EPA). Publish and disseminate a variety of information materials including an updated version of the RAPID Program general public information booklet, handbooks for state and local health officials, and fact sheets for policy makers. (ORNL) ($400)
	$9,589	$13,462	$9,924
Reliability Research (T&D)	With consumer demand for electricity growing at a 100 GW per decade rate and with increasing difficulty in siting new facilities, the U.S. electricity delivery system must use existing facilities more fully. Improved protection from power transients and other disturbances, along with real-time system control (RTSC), will allow transmission and distribution equipment to reliably operate closer to their design limits, thus improving system productivity. In a collaborative effort with NOAA (National Oceanographic and Atmospheric Administration) and EPRI (Electric Power Research Institute), collect and analyze data on geomagnetically induced currents from solar storms. Analyze mitigation concepts for transformers. Further develop mitigation options for transients and harmonics. (ORNL) ($438)	A sustained level of technology development and subsequent deployment should result in the integration of most renewable energy, energy storage, and demand-side management resources. Improvements will defer approximately $20 billion in new facilities and reduce electric costs by $1 billion per year by the year 2010. Improved protection from power transients and other disturbances, along with real-time system control (RTSC), will allow transmission and distribution equipment to reliably operate closer to design limits, thus improving system productivity. In a collaborative effort with NOAA and EPRI, collect and analyze data on geomagnetically induced currents from solar storms. Analyze mitigation concepts for transformers. Continue development on additional mitigation options for transients and harmonics. (ORNL) ($500)	Development and subsequent deployment of advanced Transmission and Distribution system technologies will enable fuller asset utilization on the existing system, increased power transfer over transmission corridors, and full implementation of renewable resources, dispersed storage and energy efficiency technologies. Technology improvements will defer approximately $20 billion in new facilities and reduce electricity costs by $1 billion per year by the year 2010. Real time system control (RTSC), full implementation of demand-side management, and higher transmission capacities will allow power systems to meet increased competition by using existing assets to operate closer to their load-carrying design limits while maintaining safety and reliability. ($0)

III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reliability Research (T&D) (Cont'd)	High-voltage D.C. (HVDC) transmission can double the power flow capacity over existing corridors, which can help satisfy rising consumer demand without siting new transmission corridors. In a collaborative and cost-shared effort with the utility sector and industry, initiate development of advanced HVDC system configurations and standardized system components. Research conducted to reduce the cost of converter station components. This research will develop power electronic components that collectively can reduce the costs of HVDC by 40-50 percent and thereby increase utility use of this technology by a factor of 10 or more. A significant portion of the technical advances will also be useful in DC/AC conversions for large variable-speed motor drives, electrical storage units, and photovoltaic generation systems. (EPACT Section 2111) (ORNL) ($2,110)	Research will continue to reduce the cost of several converter station components. This cost-shared effort is part of a multi-year plan to develop improved power components and advanced station configurations that collectively can reduce the costs of HVDC by 40-50 percent and thereby increase utility use of this technology by a factor of 10 or more. (EPACT Section 2111) (ORNL) ($2,062)	High capacity transmission research will continue to focus on reducing the cost of the high voltage direct current converters by 40-50% through the development of improved converter configurations and advanced, higher capacity switching devices. Cooperative research with industrial partners will focus on the development of models to confirm advanced converter system designs. (ORNL) ($2,453)
	Real-time system control (RTSC) technology can increase transmission and distribution efficiency, defer new generation by being able to reliably operate at a lower capacity margin, and enable demand-side management options, electric storage options, and renewable energy supplies to be fully integrated into the system, thus increasing the economic productivity of the entire electric network. In order to develop the technology and systems for real-time system control, support a collaborative, cost-shared effort with the utility sector and industry to initiate development of lower-cost, improved monitoring/sensors; to apply advanced models using fiber optics for communication for distribution system operation; and optimize control and	Real-time system control technology development will proceed in two areas: advanced transmission system automation and distribution system automation. Research will focus on advanced, low cost sensors/monitors to collect the required system information; on the development of advanced adaptive protection systems, and technologies and methodologies to integrate high data rate communication media into the system. (EPACT Section 2111) This research and development activity is part of a multi-year plan of cost-shared efforts primarily with utilities. (ORNL) ($3,299)	Real-time system control technology development will build on the results of research that defines communications, control and sensors requirements for the automation of distribution, transmission and electric control center systems. Investigations will focus on fiber optic-based communications and sensors, artificial neural networks for real-time adaptive protection and control and wide-area measurements using the power systems of utility partners to test technologies and concepts. (ORNL) ($3,000)

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III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reliability Research (T&D) (Cont'd)	operational methodologies for integration and dispatch of all resources. (EPACT Section 2111 - $1,500) (ORNL) ($2,800)		
	No Activities. ($0)	No Activities. ($0)	Advanced systems analyses will address the added complexity of integrating renewable energy, energy storage, energy efficiency, and advanced HVDC converter technologies into the electric power system. These integration analyses will be instrumental in the adoption of these emerging technologies by utilities. (ORNL) ($700)
	Continue to monitor progress of tests on the 1.8-mile, experimental high power flow transfer 6-phase transmission line installed on the NYSEG utility network. (This test was funded in FY 1991 with state and utility cofunding.) ($0)	Disseminate results of 6-phase transmission line test. ($1)	No Activities. ($0)
	Support implementation of Title I/Section 124 of the Energy Policy Act, which requires the Secretary to carry out a study of utility distribution transformers to evaluate the practicability, cost effectiveness, and potential energy savings of replacing or upgrading existing distribution transformers, and if appropriate, prescribe testing and labeling requirements. (EPACT Section 124) (ORNL) ($500)	Continue implementation of Title I/Section 124 of the Energy Policy Act, to prescribe testing and labeling requirements, if appropriate. Actions will be dependent upon study conducted in FY 1994. (EPACT Section 124) (ORNL) ($100)	No Activities. ($0)
	$5,848	$5,962	$6,153

III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Systems and Materials Research (HTS)			
Materials	High Temperature Superconductivity (HTS) electric power equipment can improve the efficiency and reduce the cost of producing, delivering (T&D), and using electricity. This program is the major Federal HTS power applications effort and features cooperative R&D performed by coordinated industry/university/national lab teams (50 cooperative R&D agreements were active in FY 1992). Successful innovative approaches to cooperative government/private sector R&D have been a program feature. Continue applied materials development to improve short HTS wire and small coil performance. Current-carrying capability, flexibility, strength, and other properties must increase for successful application. Fifty percent industry cost sharing will occur in most cooperative agreements. Development activities will include: starting materials property improvement, thermomechanical processing of short wire lengths to improve performance, and characterization/analytical support. (ANL, LANL, NREL, ORNL, SNL) ($3,022)	Support implementation of Section 2117 of the Energy Policy Act requiring the Secretary to carry out a five year program on high temperature superconducting electric power equipment technologies. Materials development activities will improve performance at higher temperatures and at all magnetic field orientations. Improved performance at higher magnetic fields will be pursued. Activities will address development of processes for increased electrical current performance in short wire lengths (improved performance in long wires is carried out under Devices and Systems below). The work is performed by coordinated industry/university/national lab teams under cooperative R&D agreements (100 such agreements have been made since the program initiation in FY 1988). These activities have kept U.S. companies technically in the forefront of intense competition with major foreign corporations. Development activities will include: Starting materials' property improvement, processing improvements in short wire lengths (long length uniformity not addressed) to raise performance, and characterization/analytical support. Industry-led thallium wire working group formed to accelerate development of thallium wires, which are relatively unexplored, but are the only present candidates for general use at liquid nitrogen temperature. (ANL, LANL, NREL, ORNL, SNL) ($3,270)	Support implementation of Section 2117 of the Energy Policy Act requiring the Secretary to carry out a five year program on high temperature superconducting electric power equipment technologies. Materials development activities will increase electrical current capacity of superconducting wires at desired operating conditions. (EPACT Section 2117 for "activities that address the development of high-temperature superconducting materials that have increased electrical current capacity, which shall be the emphasis of the program for the near-term.") Increased current capacity is essential for successful commercialization of the advanced superconductive products being developed in the program: generators, motors, fault current limiters and transmission cables. Activities will address development of processes for increased current capacity in short wire lengths (improved long wire length is accomplished under Devices and Systems below). The work is performed under CRADAs between private companies and the national laboratories. (ANL, BNL, LANL, NREL, ORNL, SNL) ($3,970)

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Program Activity	FY 1994	FY 1995	FY 1996
Materials (Cont'd)			
	$3,022	$3,270	$3,970
Devices and Systems	As an example of energy improvement potential, half a quad could be saved annually by replacing conventional large motors (over 125 HP) with superconducting designs. Similar savings could be gained through the introduction of superconducting generators or transmisison lines. Additionally, Superconducting Magnetic Energy Storage (SMES) offers benefits in generation (stored off-peak electricity from inexpensive sources can be used to meet peak demand needs), transmission (capacity of existing lines can be increased by improved control), and end use (improved customer power quality). The Department of Commerce has identified a potential multi-billion dollar per year market for HTS power equipment.	Support HTS wire development activities to improve manufacturing capability in long lengths. Electric utility-sized motors, generators, storage magnets, or transmission cables require kilometers of wires with overall high electrical performance as well as good mechanical properties. Manufacturing cost must also be reduced. Practical HTS wire is the key to capturing a worldwide market for products using superconducting wires estimated by the Department of Commerce and others at $4 Billion in the year 2000 and increasing to $75 Billion in 2020.	Support HTS wire manufacturing development activities to improve manufacturing capability. Kilometer-long lengths of high performance wire are needed for utility equipment such as the generators, motors and transmission cable under development in the program. High performance and acceptable cost are essential for product acceptability. Practical HTS wires are the key to capturing the international market for superconducting wire-using products estimated by the Department of Commerce and others at $4 Billion in the year 2000 and increasing to $75 Billion in 2020.
	Continue support of industrial scale-up for manufacturing long (100 meter or longer) HTS wire lengths. Develop coil and magnet technology for high-field (greater than 2 tesla) magnets. Support analysis and testing of long wires, coils, and magnets. Support other industrial efforts in device technology development. These continuing activities are carried out by industry/university/national lab teams under cooperative R&D agreements. (ANL, BNL, LANL, NREL, ORNL, SNL) ($13,853)	Support industry/lab cooperative projects leading to introduction of advanced HTS equipment in the electric utility system will raise efficiency and improve delivery capacity and raise quality of service. Half a quad could be saved annually by replacing conventional large motors (over 125 hp) with superconducting designs. Similar savings could be gained through the introduction of superconducting generation and transmission cables. Superconducting Magnetic Energy Storage offers benefits in generation (stored off-peak electricity from inexpensive	Support preliminary product development activities through CRADAs between private companies and the national laboratories. (EPACT Section 2117 for activities that will assist the private sector with designs for more efficient electric power generation and delivery systems which are cost competitive with conventional energy systems). Initially, the critical expertise and know-how resides at the national laboratories. The technical and economic feasibility of a wide range of energy-saving products is determined and technology transferred to U.S.

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III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):
Systems and Materials Research (HTS) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Devices and Systems (Cont'd)		sources can be used to meet high demand period needs), transmission (capacity of existing lines can be raised through improved control), and end-use (improved customer power quality). (ANL, BNL, LANL, NREL, ORNL, SNL) ($7,000)	companies, enabling them to pursue commercial product development where appropriate. (ANL, BNL, LANL, NREL, ORNL, SNL) ($6,642)
	Implement Title XXI/Section 2117 of the Energy Policy Act, which requires the Secretary to carry out a five-year program on high-temperature superconducting electric power equipment technologies. Complete SPI phase I (superconducting component development and conceptual product design) initiated in January 1993. Delay, until FY 1995, EPACT implementation through follow-on SPI agreements with industry teams for development of device prototypes such as motors, generators, magnetic storage systems and transmission cables. Negotiate interim SPI phase I component improvement. Industry-specified laboratory tasks support the SPI. (EPACT Section 2117) (ANL, BNL, LANL, NREL, ORNL, SNL; General Dynamics, American Superconductor, Southern California Edison, General Electric, Intermagnetics, Niagara Mohawk, Reliance Electric, Centerior Energy) ($3,000)	Prepare for FY 1996 implementation of Phase II of the Superconductivity Partnership Initiative (SPI). This follows completion of the Phase I component and conceptual design activities begun in FY 1993. Phase II will address the requirement of EPACT Section 2117 for "prototype development, where appropriate of the major elements of a superconducting electric power system such as motors, generators, transmission lines, transformer and magnetic storage." Industry-specified laboratory tasks will support Phase II activities. (EPACT Section 2117) (ANL, BNL, LANL, NREL, ORNL, SNL; Martin Marietta, American Superconductor, Southern California Edison, General Electric, Intermagnetics, Niagara Mohawk, Reliance Electric, Centerior Energy) ($8,000)	Support Superconducting Partnership Initiative vertically integrated company teams committed to specific product commercialization. (EPACT 2117 for "development of prototypes, where appropriate, of the major elements of a superconducting electric power system such as motors, generators, transmission lines, transformers, and magnetic energy storage systems." Industry-specified national laboratory tasks support the industry teams. A team, led by General Electric is developing utility-sized electric generators. Large industrial motors are being developed by a Reliance Electric team. Utility fault-current limiters are being developed by a Martin-Marietta team. An Electric Power Research Institute team is developing electric transmission cables. These teams were selected as a result of an earlier competition and typically include a major electric utility, a product manufacturer and a superconducting component supplier. (ANL, LANL, ORNL, SNL) ($8,000)

III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):
Systems and Materials Research (HTS) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Devices and Systems (Cont'd)	No Activities. ($0)	No Activities. ($0)	Funds are for the superconductivity program to accelerate development of high field, high temperature superconducting magnets which operate above 5 Tesla (preferably in the 10-20 Tesla range). Initial market penetration would be in research facilities. A wide range of power system and industrial use would follow. (ORNL/Univ. of TN) ($5,900)
	$16,853	$15,000	$20,742
Subtotal, Systems and Materials Research (HTS)	$19,875	$18,270	$24,712
Program Direction	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $674 12.1 Civilian personnel benefits $138 21.0 Travel and transportation of persons $13 25.2 Other services $0 Provide funds for salaries, benefits, and travel for 9 FTEs, including normal salary increases and benefits. The additional staff is needed for research and development efforts in the area of high-temperature superconducting (HTS) wires and cables, which can be used in motors, generators, transmission lines, magnetic storage, and other power-related equipment, as well as application of expanded cooperative activities with industry teams carrying out SPI projects. Additional staff is also needed for research and development efforts in the area of electro-magnetic field effects, which	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $691 12.1 Civilian personnel benefits $140 21.0 Travel and transportation of persons $13 25.2 Other services $6 Provide funds for salaries, benefits, and travel for 10 FTEs, including normal salary increases and benefits. ($850)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $696 12.1 Civilian personnel benefits $141 21.0 Travel and transportation of persons $13 25.2 Other services $0 Provide funds for salaries, benefits, and travel for 10 FTEs, including normal salary increases and benefits. ($850)

III. Electric Energy Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction (Cont'd)	addresses potential adverse health effects caused by exposure to electric and magnetic fields. ($825)		
	9.0 FTE $825	10.0 FTE $850	10.0 FTE $850
Capital Equipment	Purchase equipment for fabrication and evaluation of HTS components. (ANL, LANL, ORNL) ($873)	No equipment request. ($0)	No equipment request. ($0)
	$873	$0	$0
Subtotal, Utility Sector	9.0 FTE $37,010	10.0 FTE $38,544	10.0 FTE $41,639
Electric Energy Systems	9.0 FTE $37,010	10.0 FTE $38,544	10.0 FTE $41,639

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ENERGY STORAGE SYSTEMS

The Energy Storage System request defines relationships of the technology R&D elements to the four components of the electricity supply system: generation, transmission, distribution, and end use. The FY 1996 storage program is largely directed toward areas that have a potential beneficial effect on the projected transmission and distribution issues of the next two decades.

For much of the 1980s, Federal utility storage activities, particularly stationary battery R&D, were largely driven by generation needs and, to a lesser extent, by end-use applications. The principal applications addressed have been load-leveling, intermittent renewable storage, and other enhancements to various supply systems. More recently, the projected difficulties of the distribution segment of the utility system in accommodating demand growth have assumed new prominence in storage planning. Storage can overcome instabilities, prevent momentary overloads, increase overall reliability, reduce need for redundancy, and help maintain power quality -- all functions that can substantially reduce the need for new transmission and distribution facilities in the next two decades. Studies project over $26 Billion in national benefits by 2010 from the installation of 11 Gigawatts of storage. Thus, the Energy Storage Systems element becomes a direct complement to the Electric Energy Systems element in addressing T&D needs and in increasing the overall productivity of the electric supply system.

Battery storage can provide virtually instantaneous power, a necessary characteristic for realizing the benefits enumerated above. The battery storage effort will focus on transportable modular systems for distributed applications. The program will include the development and field application of advanced battery systems development efforts as related to these modular systems as well as to versatile standardized power conditioning subsystems. The goal is to stimulate a battery manufacturer's interest in serving utility needs and to phase out Federal assistance after several years.

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, EE has developed a comprehensive Streamlining Plan. The Plan assumes no growth in FTEs beyond the FY 1995 level despite program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing nonsupervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NPR reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Energy Storage Systems

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Energy Storage Systems					
Operating Expenses	$ 6,931	$ 6,050	$ -218	$ 5,832	$ 6,006
Capital Equipment	291	0	0	0	0
Subtotal, Energy Storage Systems	$ 7,222 a/	$ 6,050	$ -218 c/	$ 5,832	$ 6,006
Adjustment	$ -129 b/	$ 0	$ - 66	$ -66 d/	$ -88 e/
TOTAL	$ 7,093	$ 6,050	$ -284	$ 5,766	$ 5,918
Summary					
Operating Expenses	$ 6,807	$ 6,050	$ 0	$ 5,766	$ 6,006
Capital Equipment	286	0	0	0	0
Total Program	$ 7,093	$ 6,050	$ 0	$ 5,766	$ 6,006
Staffing (FTEs)	5	5	0	5	5

Authorizations:
P.L. 93-577, "Federal Nonnuclear Energy Research and Development Act of 1974"
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 101-566, "Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990"
P.L. 102-486, "Energy Policy Act of 1992"

a/ Reflects adjustment to Conference Mark of $-33 for M&O Contractor Salary Freeze: $-10,223 for the FY 1994 Rescission, P.L. 103-211; and $-46 for approved reprogramming 94-R-4 for FY 1994 Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) activities. Total: $-10,302.
b/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1994 Energy and Water Development Appropriations Act, P.L. 103-126.
c/ Reflects the following adjustments: $-100 for ESR&D General Reductions and $-118 for Renewable Energy Production Incentive. Total: $-218.
d/ Reflects the use of prior-year balances in the Energy Supply, Research and Development (ESR&D) account in accordance with the FY 1995 Energy and Water Development Appropriation Act, P.L. 103-316.
e/ In support of DOE efforts for prudent management of financial resources, the Office of Energy Efficiency and Renewable Energy is conducting a detailed review of uncosted balances. This is in accordance with the Departmental objective of reducing excessive uncosted balances. Estimates of approximately $6 million have been identified and the savings have been applied pro-rata as an offset to the FY 1996 budget. Once the review is completed, adjustments will be made to reflect actual savings. Pro-rata amount for Energy Storage Systems is $-88.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Energy Storage Systems

FY 1995 Appropriation	$ 6,050
- Adjustment -	-218
FY 1995 Adjusted	$ 5,832
- Transfer -	0
FY 1995 Comparable	$ 5,832
Energy Storage Systems	
- Utility Battery Storage -	+174
Subtotal, Energy Storage Systems	$ 6,006
Adjustment	$ -88
FY 1996 Congressional Budget Request	$ 5,918

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENERGY STORAGE SYSTEMS

I. Preface: Energy Storage Systems

The FY 1996 Energy Storage program is directed toward development of storage systems meeting utility requirements, particularly for those identified in distributed utility scenarios. Studies by DOE, in cooperation with several utilities, have already shown that utility battery storage systems, with appropriate packaging and power conditioning, can potentially provide cost-effective solutions to existing problems. These problems include frequency regulation, voltage regulation, line stability, area regulation, transmission and distribution equipment deferral, and spinning reserve. The Utility Battery Storage program is assisting the utility industry to develop distributed energy storage systems as an important resource option for near-to mid-term applications. By cooperating with both utility and battery industries, the Federal program will help to promote a sustainable commerce in storage that addresses vital utility needs and improves the economic productivity of the electric delivery systems. This approach leads to the possibility that, within a few years, the battery manufacturers can assume the role of addressing utility battery storage issues without Federal assistance. Current cost-sharing within the program is expected to increase with development of prototype components and subsystems which are approaching the commercialization phase; for the overall program in FY 1996, cost-sharing is estimated at two dollars for every three dollars of federal funds.

The battery storage program activities in FY 1996 include development of several portable battery systems, including a modular battery storage design for 2MW, 10-second power quality applications, and proof of concept tests of selected advanced batteries at utility sites. Field tests will be conducted on a 250kW modular battery system. The design and construction phase of the transportable battery system (2-MW, 2-hour) is complete and on-site testing by the host utilities will be initiated in FY 1996. The field tests of each of these systems will provide hands-on operating experience to utilities as well as data to verify projected benefits. Quantitative characterization of these prototype integrated systems will be made to assess readiness for final commercial production. With 11 Gigawatts of storage, net benefits of $26 billion are estimated based on applications to spinning reserve, capacity and transmission line deferral, general dispatch and demand-side management. Detailed determination of all potential national benefits of using battery energy storage and application-specific requirements will be completed in FY 1996 and will be used to design future battery energy storage systems.

Performance Measures/Expected Outcomes for Utility Battery Storage Systems Program include:

- Determination of national benefits of using battery energy storage and application-specific requirements to be used for designing battery energy storage systems by the end of the calendar year 1996.
- Development of electrical subsystems with enhanced performance based on system requirements.
- Characterization of battery performance and life for development guidance and independent assessment.
- Performing quantitative characterization of prototype integrated systems to assess readiness for final commercial product.
- Heightening the awareness and knowledge of battery storage applications by the utility industry.

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II. A. Summary Table: Energy Storage Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utility Sector				
Utility Battery Storage	$ 5,538	$ 5,482	$ 5,656	$ 174
Thermal Storage	1,053	0	0	0
Program Direction	340	350	350	0
Capital Equipment	291	0	0	0
Subtotal, Utility Sector	$ 7,222	$ 5,832	$ 6,006	$ 174
Total, Energy Storage Systems	$ 7,222	$ 5,832	$ 6,006	$ 174

II. B. Laboratory and Facility Funding Table: Energy Storage Systems

Pacific Northwest Lab	$ 935	$ 0	$ 0	$ 0
Sandia National Laboratories	4,913	5,832	5,100	-732
All Other	1,374	0	906	906
Total, Energy Storage Systems	$ 7,222	$ 5,832	$ 6,006	$ 174

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Energy Storage Systems			
Utility Sector			
Utility Battery Storage	The program focuses on activities to develop utility battery storage systems for near- to mid-term applications to overcome growing limitations in today's T&D systems, to relieve generating capacity constraints, to improve end-use service, and to improve overall system productivity. Continue cooperative systems studies with utilities to quantify benefits for several types of applications, especially dynamic operating T&D applications (such as frequency and voltage regulation) and capital deferments (such as avoidance of T&D and generating capacity additions). These studies include evaluation of the potential for various types of storage to enhance the battery system benefits. Based upon the results of these studies, the Government will provide design assistance to utility/battery industry partnerships to encourage independent private-sector evaluation of the storage contribution to specific utility environments.	The Utility Battery Storage program is assisting the utility industry, including suppliers, to develop distributed energy storage systems as an important resource option for near- to mid-term applications. Utility customers will ultimately benefit from the widespread adoption of distributed energy storage systems as well as modular renewable energy systems and localized demand-side management programs. Customer benefits will include broader utility energy services, lower costs due to more efficient T&D asset utilization, and environmental benefits from increased use of storage and renewable energy technologies. Recently completed cooperative system benefits studies provide the basis for quantifying national benefits from battery storage: Based upon 10-GW of battery storage installed by 2010, benefits of $14 billion will be obtained from an investment of $8 billion.	The objective of the Utility Battery Storage Systems (UBS) Program is to cooperate with the electric utility and manufacturing industries to ensure battery energy storage (BES) systems will be an economically attractive utility resource option by the end of this decade. Utilities are planning now for the generation, transmission, distribution, and demand-side management resources that will be needed in the future. Consideration is being given to several new strategic factors that include increased competition with respect to electricity supply, greater required energy efficiency, and more restrictive environmental regulations. BES is an option that can help utilities address these factors by improving cost-effectiveness, reliability, and power quality and by reducing the environmental impact of electricity generation and distribution. BES systems function over a wide range of conditions, permitting flexible utility dispatch of energy. From an economic perspective alone, preliminary analyses predict a benefit-to-cost ratio of about two for the installation of 11 gigawatts of BES by 2010. Several prototype BES installations are being field tested, and widespread implementation of this option is expected to be a key step in securing a role for all emerging large-scale energy-storage options.
	Complete field tests of a 250-kW peak power, 167-kWh low-maintenance modular	Complete cooperative systems studies with individual utilities necessary to	Continue refining benefits and requirements for BES applications.

III. Energy Storage Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Utility Battery Storage (Cont'd)	system, incorporating commercial batteries, for near-term applications at the host utility; begin planning for a jointly funded industry/government development of a 2-MW, 2-hour portable system, "battery on wheels." By providing temporary storage connection to a utility-specified site, these units will allow utilities to address the difficult issue of quantifying storage benefits and will promote follow-up utility investment. Complete R&D on joint government/industry development of advanced batteries. Initiate efforts to improve key sub-system elements that inhibit adoption of storage systems based on commercially available batteries. Based upon the successful development of previously described systems, it is anticipated that 10-GWs of battery storage systems can be installed by 2010, thus offsetting utility investments in similar amounts of T&D and generating facilities. (SNL; GNB, Silent Power Limited, JCI, AC Battery/Omnion) ($5,538)	refine the set of national benefits and develop system-level requirements for battery energy storage applications. Redesign the 250-kW peak power modular system to meet short term power requirements of up to 2 MW for 10 seconds. Construct the jointly funded industry government transportable 2-MW, 2-hour modular battery storage system and initiate field tests at critical locations on the host utility to verify benefits and overcome institutional barriers found in utilities in order to commercialize battery storage systems. (SNL) ($3,682)	Develop advanced power conditioning system, electronic controls, and interface hardware with emphasis on improving efficiency, cost, life, and compatibility with all candidate battery technologies. Continue activities to integrate BES components into effective systems that eventually result in demonstrations at utility sites. Included are the improved valve-regulated lead-acid battery technology, developed under the UBS program, and a modular lead-acid system. Continue out-reach activities with the utility industry by actively communicating the capabilities and benefits of BES. Establish a Battery Technology Assistance Center for BES systems that will permit utilities to easily obtain design characteristics and objective information. (SNL) ($3,256)
	No Activities. ($0)	Initiate efforts to design modular battery energy storage systems incorporating advanced batteries, including sodium sulfur and zinc/bromine batteries, and standardized power conditioning subsystems. (SNL) ($600)	Continue the effort to design and fabricate prototype modular systems incorporating advanced batteries. The objective is to demonstrate, through field evaluation, the additional benefits of advanced batteries related to cost, transportability, and smaller size. This initial phase will result in a small pre-prototype system suitable for laboratory testing. If successful, a full-scale prototype will be fabricated. Design versatile, self commutated power conditioning subsystems compatible with a wide range

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III. Energy Storage Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Utility Battery Storage (Cont'd)			of commercial and advanced batteries. (SNL) ($1,600)
	No Activities. ($0)	Conduct cost-shared proof-of-concept tests at selected utilities of the advanced batteries developed jointly by industry and government. (SNL) ($1,200)	Continue performance and service life qualification of portable modular battery storage systems through field evaluation tests at utility sites. This includes initiation of the photovoltaic/battery hybrid system demonstration and continuation of the Utility-Scale Battery Demonstration (USBD) as well as several smaller demonstrations at host utilities. (SNL) ($800)
	$5,538	$5,482	$5,656
Thermal Storage	Continue research focused on seasonal thermal energy storage for utility application, to improve energy efficiency and economics while reducing peak energy use and environmental impacts of energy generation. (PNL) ($1,053)	Continue research focused on seasonal thermal energy storage for heating, cooling and utility applications. (PNL) ($0)	No Activities. ($0)
	$1,053	$0	$0

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III. Energy Storage Systems (Cont'd):
Utility Sector (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $260 12.1 Civilian personnel benefits $46 21.0 Travel and transportation of persons $33 25.2 Other services $1 Provide funds for salaries, benefits, and travel for 5 FTEs, including normal increases in salary and benefits. ($340) 5.0 FTE $340	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $263 12.1 Civilian personnel benefits $47 21.0 Travel and transportation of persons $34 25.2 Other services $6 Provide funds for salaries, benefits, and travel for 5 FTEs, including normal increases in salary and benefits. ($350) 5.0 FTE $350	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $267 12.1 Civilian personnel benefits $48 21.0 Travel and transportation of persons $35 25.2 Other services $0 Provide funds for salaries, benefits, and travel for 5 FTEs, including normal increases in salary and benefits. ($350) 5.0 FTE $350
Capital Equipment	Purchase laboratory equipment for battery testing and subsystem evaluation. (SNL) ($291) $291	No equipment request. ($0) $0	No equipment request. ($0) $0
Subtotal, Utility Sector	5.0 FTE $7,222	5.0 FTE $5,832	5.0 FTE $6,006
Energy Storage Systems	5.0 FTE $7,222	5.0 FTE $5,832	5.0 FTE $6,006

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

IN-HOUSE ENERGY MANAGEMENT

The goal of the In-house Energy Management Program is to reduce energy consumption and utility/energy costs for the Department of Energy's (DOE) facilities. As such, the program supports all mission areas. The program is structured to provide training, and survey and study facilities and processes owned by DOE, in order to identify retrofits and modifications to DOE facilities which save energy and have a high return on investment. Projects identified compete for funding on a DOE-wide basis and are selected to maximize the DOE's economic return.

The FY 1996 Congressional Budget submission reflects the transfer of the functions for the Department's In-House Energy Management activities from the Office of the Associate Deputy Secretary for Field Management (FM) to the Assistant Secretary for Energy Efficiency and Renewable Energy (EE). Consequently, the Assistant Secretary for Energy Efficiency and Renewable Energy is specifically responsible for the In-House Energy Management Program in the Energy Supply, Research and Development appropriation. The IHEM transfer was made concurrently with the transfer of the functions of the Office of Federal Energy Management Program (FEMP) from the Office of the Deputy Assistant Secretary for Building Technologies to establish a staff office reporting directly to the Assistant Secretary for Energy Efficiency and Renewable Energy for increased coordination between these related programs.

Recent significant accomplishments include:

o In FY 1994, $6.3 Million was invested for surveys and studies to identify retrofit projects for future funding and to identify no or low cost operational changes to reduce current energy consumption.

o In FY 1994, 75 projects were funded, which when complete, will have a payback of slightly greater than 3 years, and save the Department approximately $5 million a year.

o FY 1994 energy consumption per square foot in DOE buildings has been reduced by 24 percent as compared to FY 1985, already achieving the FY 2000 goal of the Energy Policy Act of 1992.

o FY 1994 energy consumption per square foot in DOE metered processes has been reduced by 45.8 percent as compared to FY 1985.

Specific objectives for FY 1996 to FY 2000 are:

o To reduce energy consumption per square foot in DOE buildings by 1 percent each year.

o To increase the annual dollar savings by 20 percent or $1 million, with the increased level of funding for surveys and retrofit projects as part of the President's Investment Program, and increased use of Energy Savings Performance Contracts.

o To identify and fund additional retrofit projects with payback periods of less than ten years as required by the Energy Policy Act of 1992, Public Law 102-486, the National Energy Conservation Policy Act, Public Law 95-619, and Executive Order 12902 on Energy Efficiency and Water Conservation at Federal Facilities, in order to improve the energy efficiency, and reduce the environmental pollution and operating costs of DOE.

o To demonstrate at DOE sites new or emerging energy saving technologies that advance the state-of-the-art in energy conservation.

o To initiate an experimental program to provide joint funding with other DOE organizations for integrated chiller retrofit projects that include energy conservation cooling-load reduction measures and support the regulatory phase-out of chlorofluorocarbons.

Performance Measures for the program are:

- o Annual dollar savings greater than $5 million per year.
- o Buildings energy consumption per square foot reduced by at least 1 percent per year.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

In-house Energy Management

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
In-house Energy Management					
Operating Expenses	$ 6,324 a/	$ 6,550	$ -521 d/	$ 6,029	$ 15,664
Construction	18,975 b/	24,700	0	24,700	13,125
Subtotal, In-house Energy Management	$ 25,299	$ 31,250	$ -521	$ 30,729	$ 28,789
Subtotal, In-house Energy Management	$ 25,299	$ 31,250	$ -521	$ 30,729	$ 28,789
Adjustment	-444 c/	0	-343 e/	-343	0
TOTAL	$ 24,855	$ 31,250	$ -864	$ 30,386	$ 28,789
Summary					
Operating Expenses	$ 6,324	$ 6,550	$ -521	$ 6,029	$ 15,664
Construction	18,975	24,700	0	24,700	13,125
Undesignated	-444	0	-343	-343	0
Total Program	$ 24,855	$ 31,250	$ -864	$ 30,386	$ 28,789
Staffing (FTEs)	0	0	0	0	6

Authorizations:
P.L. 95-91, "Department of Energy Organization Act" (1977)

a/ Reflects adjustments of $-70 thousand for M&O contractor salary freeze and $-196 thousand for the FY 1994 Rescission, P.L. 103-211; totaling $-266 thousand.
b/ Reflects an adjustment of $-580 thousand for the FY 1994 Rescission, P.L. 103-211.
c/ Reflects the use of $-444 thousand in prior year balances in accordance with the FY 1994 Energy and Water Development Appropriation Act, P.L. 103-126.
d/ Reflects an adjustment of $-521 thousand to the FY 1995 Conference Mark for productivity savings, procurement reform, and general reductions.
e/ Reflects the use $-343 thousand in prior year balances in accordance with the FY 1995 Energy and Water Development Appropriation Act, P.L. 103-316.

FIELD OFFICE FUNDING BY SITE

In-house Energy Management

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Sandia National Laboratories	$ 200	$ 200	$ 0	$ 200	$ 2,200
Kansas City Plant	200	210	0	210	210
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 400	$ 410	$ 0	$ 410	$ 2,410
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 1,133	$ 924	$ 0	$ 924	$ 2,924
Brookhaven National Lab	1,260	1,688	0	1,688	1,588
Subtotal, CHICAGO OPERATIONS OFFICE	$ 2,393	$ 2,612	$ 0	$ 2,612	$ 4,512
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 730	$ 730	$ 0	$ 730	$ 1,130
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 260	$ 260	$ 0	$ 260	$ 2,210
Y-12 Plant	340	240	0	240	2,240
K-25 Site	270	453	0	453	274
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 870	$ 953	$ 0	$ 953	$ 4,724
OAKLAND OPERATIONS OFFICE					
Lawrence Berkeley Lab	$ 2,650	$ 1,824	$ 0	$ 1,824	$ 1,667
Lawrence Livermore National Lab	1,849	3,010	0	3,010	3,810
Subtotal, OAKLAND OPERATIONS OFFICE	$ 4,499	$ 4,834	$ 0	$ 4,834	$ 5,477
ALL OTHER	$ 16,407	$ 21,711	$ -521	$ 21,190	$ 10,536
TOTAL	$ 25,299	$ 31,250	$ -521	$ 30,729	$ 28,789

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

In-house Energy Management

FY 1995 Appropriation	$ 31,250
- Adjustment -	-521
FY 1995 Adjusted	$ 30,729
- Transfer -	0
FY 1995 Comparable	$ 30,729

In-house Energy Management

- Surveys, Studies, and Operator Training - Slightly decrease the level of funding for surveys, studies and utility site assessments to identify retrofit projects.	-1,186
- Program Direction - Provides for Salaries and Benefits of IHEM staff, travel for IHEM staff, and contractor support services, previously appropriated under DOE's Departmental Administration.	+821
- Integrated Chiller Retrofit Projects - Initiates an experimental 2-year program to provide joint funding with other DOE organizations for integrated chiller replacement projects, to maxmize energy savings and support the regulatory phase-out of chlorofluorocarbons.	+10,000
- Other Energy Conservation Retrofit Projects - Net decrease to the level of funding for energy conservation retrofit projects after providing for integrated chiller replacement projects.	-11,575
FY 1996 CONGRESSIONAL Budget Request	$ 28,789

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KEY ACTIVITY SUMMARY

IN-HOUSE ENERGY MANAGEMENT

I. Preface: In-house Energy Management

The goal of the In-house Energy Management Program is to reduce energy consumption and utility/energy costs for the Department of Energy's (DOE) facilities. As such, the program supports all mission areas. The program is structured to provide training, and survey and study facilities, utilities and processes owned by the DOE, in order to identify retrofits and modifications which save energy and have a high return on investment. Projects identified compete for funding on a DOE-wide basis and are selected to maximize the DOE's economic return. Continuation of an annual program of quick payback retrofit projects for the DOE's facilities reduces outyear utility costs, provides a rate of return exceeding 30 percent on the dollars invested and will meet goals set by legislation. The joint funding with DOE organizations of integrated chiller retrofit projects with other energy conservation measures will encourage these DOE organizations to invest in downsized chillers that operate more efficiently saving both energy and investment dollars. The demonstration of a new or emerging energy savings technology at DOE sites would provide the leadership DOE must demonstrate in energy conservation and the areas related to the generation and use of energy.

II. A. Summary Table: In-house Energy Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Surveys, Studies, and Operator Training	$ 6,324	$ 6,029	$ 4,843	$ -1,186
Program Direction	0	0	821	821
Energy Conservation Retrofit and Central Plant Projects				
Integrated Chiller Retrofit Projects	0	0	10,000	10,000
Other Energy Conservation Retrofit Projects	18,975	24,700	13,125	-11,575
Subtotal, Energy Conservation Retrofit and Central Plant Projects	$ 18,975	$ 24,700	$ 23,125	$ -1,575
Total, In-house Energy Management	$ 25,299	$ 30,729	$ 28,789	$ -1,940

II. B. Laboratory and Facility Funding Table: In-house Energy Management

All Other	$ 25,299	$ 30,729	$ 28,789	$ -1,940
Total, In-house Energy Management	$ 25,299	$ 30,729	$ 28,789	$ -1,940

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
In-house Energy Management			
Surveys, Studies, and Operator Training	INVESTMENT/Federal Facility Energy Efficiency (FFEE): Increase the level of funding for surveys, studies, and utility site assessments by $3 million over FY 1993 baseline as part of the President's Investment program, to identify retrofit projects for future funding. Provide training for central plant operators and energy managers. ($6,324)	INVESTMENT/FFEE: Maintain increased level of funding for surveys, studies, and utility site assessments to identify retrofit projects for future funding. Provide training for central plant operators and energy managers. ($6,029)	INVESTMENT/FFEE: As part of the President's Investment Program provide funding for surveys and studies to identify retrofit projects for future funding and provide training for central plant operators and energy managers. ($4,843)
	$6,324	$6,029	$4,843
Program Direction	In FY 1994, these activities were requested and appropriated in the Departmental Administration appropriation. ($0)	In FY 1995, these activities were requested and appropriated in the Departmental Administration appropriation. ($0)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $ 406 12.1 Civilian personnel benefits $ 69 21.0 Travel and transportation of persons $ 25 25.1 Consulting services $ 321 Provides salaries for six direct funded IHEM staff and contractor support services for budget preparation and execution, program/project management, reporting and oversight activities. Includes FY 1996 pay raise and locality increases. ($821)
	$0	$0	6.0 FTE $821
Energy Conservation Retrofit and Central Plant Projects			

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III. In-house Energy Management (Cont'd):
Energy Conservation Retrofit and Central Plant Projects (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Integrated Chiller Retrofit Projects	In FY 1994, funding for this activity was not requested. ($0)	In FY 1995, funding for this activity was not requested. ($0)	Initiate an experimental 2-year program to provide joint funding with other DOE organizations for integrated chiller replacement projects that include other cooling-load reduction measures. This will improve energy conservation, allow chillers to be down-sized to operate more efficiently while reducing investment cost, and support the regulatory phase-out of chlorofluorocarbons. ($10,000)
	$0	$0	$10,000
Other Energy Conservation Retrofit Projects	INVESTMENT/Federal Facility Energy Efficiency (FFEE): Increase the level of funding by $3 million over FY 1993 baseline as part of the President's Investment Program to fund approximately 75 small energy conservation projects. These projects when complete, will have a payback slightly greater than 3 years. Demonstrate a new or emerging energy saving technology at a DOE site. ($18,975)	INVESTMENT/FFEE: Increase the level of funding by $7 million over FY 1993 baseline as part of the President's Investment Program to fund approximately 95 small energy conservation projects. These projects when complete, will have a payback slightly greater than 3 years. Demonstrate a new or emerging energy saving technology at a DOE site. ($24,700)	INVESTMENT/FFEE: As part of the President's Investment Program, fund approximately 50 small energy conservation retrofit projects. These projects when complete will have a payback slightly greater than 3 years. Demonstrate a new or emerging energy saving technology at a DOE site. ($13,125)
	$18,975	$24,700	$13,125
Subtotal, Energy Conservation Retrofit and Central Plant Projects	$18,975	$24,700	$23,125
In-house Energy Management	$25,299	$30,729	6.0 FTE $28,789

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CONSTRUCTION PROJECTS

In-house Energy Management

IV. A. Construction Project Summary

Project No.	Project Title	Prior Year Obligations	FY 1995 Appropriated	FY 1996 Request	Unappropriated Balance	TEC
IHE-500	Modifications for Energy Management, Various Locations	$53,964	$24,700	$13,125	$ 0	$13,125
	Total, In-house Energy Management	$53,964	$24,700	$13,125	$ 0	$13,125

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ASSISTANT SECRETARY FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY CONSTRUCTION PROJECT SUMMARY

In-house Energy Management

IV. B. Plant Funded Construction Project

1. Project title and location: IHE-500 Modifications for Energy Management, Various Location

Project TEC: $13,125
Start Date: 2nd Qtr. FY 1996
Completion Date: 4th Qtr. FY 1998

2. Financial schedule:

		Costs		
Fiscal Year	Obligations	FY 1995	FY 1996	After FY 1997
FY 1995 Projects	$24,700	$8,700	$12,000	$ 4,000
FY 1996 Projects	$13,125	0	5,000	8,125

3. Narrative:

This project provides for the design and construction of various small retrofit projects to reduce energy consumption. These small modifications will be selected on the basis of return on investment and energy savings. Projects compete on a DOE-wide basis for funding under this lump sum item, thus assuring the greatest return and greatest energy savings per investment dollar for the Department of Energy. The average payback for this line item based on past experience, is slightly greater than 3 years. This line item also provides for the design and construction of a life-cycle cost effective project to demonstrate a new or emerging energy savings technology, that advances the state of the art in energy conservation and the generation and use of energy, at a DOE site.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request
Construction.....	$ 34,470	$19,494	$24,700	$13,125

Nuclear Energy

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DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

NUCLEAR ENERGY

VOLUME 2

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

NUCLEAR ENERGY R&D

The Advanced Light Water Reactors (ALWR) program is Nuclear Energy's highest priority program and focuses on making standardized ALWRs available for orders during the 1990s to allow their contribution to the new electrical generation capacity projected to be required by 2010. ALWR programs are carried out under cost-shared partnerships with industry. In FY 1996, rulemaking proceedings for design certification of the General Electric Advanced Boiling Water Reactor and ABB-Combustion Engineering System 80+ Advanced Pressurized Water Reactor plants will continue if hearings are required. Safety analysis and probability risk assessments will be performed in support of safety reviews by NRC for the Westinghouse AP-600 and the General Electric Simplified Boiling Water Reactor Plants. Responses to the NRC Final Safety Evaluation Report for the AP-600 design will be initiated. The First-of-a-Kind engineering program will be continued to produce standardized designs for the Advanced Boiling Water Reactor and the Westinghouse Advanced Passive plant designs.

The following Advanced Reactor R&D programs are being terminated in FY 1995: The Advanced Liquid Metal Reactor (ALMR), and the Integral Fast Reactor (IFR)/Actinide Recycle programs. The program will utilize the FY 1996 funds to continue orderly program close-out activities. Phaseout of the Modular High Temperature Gas-Cooled Reactor (MHTGR) program will be initiated in FY 1996.

Following termination of the Integral Fast Reactor/Actinide Recycle program in FY 1995, the proposed program provides for the redirection of valuable intellectual and physical resources at Argonne National Laboratory (ANL) to higher priority missions of the Department, such as reactor safety, decontamination and decommissioning, and technology research and development for the treatment of DOE spent fuels. Funding for these activities is requested under the new Nuclear Technology Research and Development decision unit.

The modified Fuel Cycle Facility (FCF) and Analytical Laboratory will be operated to support the permanent shutdown of the Experimental Breeder Reactor II (EBR-II), which was initiated October 1, 1994, by using metallurgical techniques to treat the blanket and driver fuel and placed into a storable form. During FY 1995 the National Academy of Sciences is performing a study evaluating the use of electrometallurgical technology as a means of spent fuel treatment for other DOE fuels. The scope and funding required for the redirected program will depend upon the results of that study.

NUCLEAR ENERGY R&D - OVERVIEW

The Test Reactor Area (TRA) Hot Cells program provides for the Idaho National Engineering Laboratory (INEL) TRA hot cells to be maintained in an operational status to support production of isotopes for medical and industrial applications and other programs. Services available to users for irradiated experiments and isotopes produced in the Advanced Test Reactor (ATR) or other facilities include disassembly, processing, and preparation for shipment. Photographic metallographic and scanning electron microscope examination and analysis of irradiated material can also be conducted as required by program sponsors.

The Advanced Test Reactor Fusion Irradiation program provides for the transfer to the ATR of irradiations in support of the Department of Energy (DOE)-Monbusho Fusion Energy program. These programs, initially planned to be conducted in the Fast Flux Test Facility, were subsequently transferred to the EBR-II. With the shutdown of EBR-II, the irradiation programs are planned to be transferred to the ATR.

The TRA Landlord program provides for performing landlord activities at the TRA. Operating and construction activities will be conducted to ensure the safety and reliability of TRA site activities. In FY 1996, activities will be directed to correcting environmental, safety and health deficiencies identified during inspections and assessments, and to conducting Title II (detailed) design for upgrades required to conform to current fire and life safety standards.

The Advanced Radioisotope Power Systems program provides the sole capability to develop and produce radioisotope power systems for NASA and DOD space and terrestrial missions. For over 30 years, these maintenance-free power systems have proven to be reliable and capable of producing electrical power for remote application in excess of 20 years. In FY 1996, this program will focus on producing three new radioisotope thermoelectric generators for NASA's Cassini mission to be launched in 1997.

The Oak Ridge Landlord account provides for centralized Oak Ridge Operations Office infrastructure requirements and general operating costs essential to maintaining a viable functioning field office.

The University Nuclear Science and Reactor Support program is a new decision unit within Nuclear Energy R&D. This program provides funding for nuclear science and technology education and research grants and university reactor fuel supply and upgrades. These were previously funded under the Reactor Fuel Assistance Program with in the Office of Science Education and Technical Information.

As in previous years, this budget supports the performance of beneficial work for others activities that are performed on a fully reimbursable basis including costs associated with the use of facilities and staff resources.

NUCLEAR ENERGY R&D - OVERVIEW

Output Measures:
-Commence reactor vessel annealing demonstrations.
-Complete SSAR design base analysis for AP600.
-Complete responses to AP600 Final Safety Evaluation Report.
-Complete SBWR test program.
-Complete detailed designs for systems to be designed for ABWR first-of-a-kind engineering.
-Complete fabrication of two of the three RTGs required for the NASA Cassini Mission.
-Complete the Safety Test Program and the draft of the Final Safety Analysis Report for the Cassini Mission RTGs.
-Complete the fabrication of all 157 Radioisotope Heater Units to be used on the Cassini spacecraft.
-Complete modifications to engineering-scale electrorefiner to initiate demonstration of electrometallurgical fuel treatment technology for selected DOE spent fuels.
-Complete Title II, detailed design for the Idaho Test Research Area Fire and Life Safety Upgrade project by the end of FY 1996 and be ready to commence construction in FY 1997.
-Complete the design, fabrication and installation of a test vehicle in the Advanced Test Reactor for the fusion materials irradiation test program by the end of FY 1996 and be fully ready to commence irradiation testing in FY 1997.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

LEAD TABLE

Nuclear Energy R&D

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Light Water Reactors					
Operating Expense	$ 55,188	$ 65,000	$ -671	$ 64,329	$ 49,740
Advanced Reactor R&D					
Operating Expense	$ 40,047	$ 20,700	$ -752	$ 19,948	$ 0
Space Reactor Power Systems					
Operating Expense	$ 26,528	$ 1,500	$ -276	$ 1,224	$ 0
Advanced Radioisotope Power Systems					
Operating Expense	$ 49,358	$ 59,083	$ -1,043	$ 58,040	$ 48,337
Capital Equipment	1,745	2,000	-146	1,854	900
Subtotal, Advanced Radioisotope	$ 51,103	$ 61,083	$ -1,189	$ 59,894	$ 49,237
Facilities					
Operating Expense	$ 6,455	$ 7,100	$ -73	$ 7,027	$ 0
Nuclear Technology R&D					
Operating Expense	$ 0	$ 0	$ +21,000	$ 21,000	$ 37,300
Program Direction					
Operating Expense	$ 11,144	$ 12,500	$ 0	$ 12,500	$ 13,000
Policy and Management					
Operating Expense	$ 11,289	$ 11,900	$ 0	$ 11,900	$ 10,200
TRA Hot Cells					
Operating Expense	$ 1,175	$ 1,245	$ -15	$ 1,230	$ 1,200
Capital Equipment	136	200	0	200	200
Subtotal, TRA Hot Cells	$ 1,311	$ 1,445	$ -15	$ 1,430	$ 1,400

Lead Table - Nuclear Energy R&D (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Oak Ridge Landlord					
Operating Expense	$ 15,304	$ 10,164	$ -148	$ 10,016	$ 12,449
Capital Equipment	651	1,981	0	1,981	2,981
Construction	8,251	2,255	0	2,255	3,255
Subtotal, Oak Ridge Landlord	$ 24,206	$ 14,400	$ -148	$ 14,252	$ 18,685
TRA Landlord					
Operating Expense	$ 0	$ 1,500	$ -13	$ 1,487	$ 1,085
Capital Equipment	0	0	0	0	285
Construction	0	2,500	-28	2,472	2,630
Subtotal, TRA Landlord	$ 0	$ 4,000	$ -41	$ 3,959	$ 4,000
ATR Fusion Irradiations					
Operating Expense	$ 0	$ 3,500	$ -817	$ 2,683	$ 2,303
University Nuclear Science and Reactor Support					
Operating Expense	$ 0	$ 0	$ 0	$ 0	$ 6,130
TOTAL, Nuclear Energy R&D	$ 227,271	$ 203,128	$ +17,018	$ 220,146	$ 191,995
Summary					
Operating Expense	$ 216,488	$ 194,192	$ +17,192	$ 211,384	$ 181,744
Capital Equipment	2,532	4,181	-146	4,035	4,366
Construction	8,251	4,755	-28	4,727	5,885
Total, Nuclear Energy R&D	$ 227,271	$ 203,128	$ +17,018 a/	$ 220,146	$ 191,995
Staffing (FTE's)	197	171		171	166

a/ Adjustment's reflect productivity savings, GSA rent reductions, procurement reform, and Departmental General Reductions and reprogramming for Nuclear Technology R&D activities.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

LEAD TABLE

Termination Costs

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Termination Costs					
Operating Expense	$ 97,942	$ 63,000	$ 0	$ 63,000	$ 76,000
Capital Equipment	4,861	1,000	0	1,000	3,000
Construction	1,944	6,500	-795	5,705	2,700
Total, Termination Costs	$ 104,747	$ 70,500	$ -795	$ 69,705	$ 81,700
Total, Nuclear Energy R&D A/	$ 227,271	$ 203,128	$ +17,018	$ 220,146	$ 191,995
Total, Soviet-Designed Reactor Safety	$ 30,000	$ 0	$ 0	$ 0	$ 78,764
Total, Russian Replacement Power Initiative	$ 0	$ 0	$ 0	$ 0	$ 5,000
Total, Isotope Support	$ 0	$ 19,600	$ -107	$ 19,493	$ 25,358
Total, Nuclear Energy	$ 362,018	$ 293,228	$ +16,116	$ 309,344	$ 382,817
Adjustments					
Prior Year Balances/General Reduction	$ -28,038	$ -6,570	$ +3,146	$ -3,424	$ 0
Total, NE Program	$ 333,980	$ 286,658	$ +19,262 B/	$ 305,920	$ 382,817
Summary					
Operating Expense	$ 316,392	$ 270,222	$ +20,231	$ 290,453	$ 366,866
Capital Equipment	7,393	5,181	-146	5,035	7,366
Construction	10,195	11,255	-823	10,432	8,585
Total, Nuclear Energy R&D	$ 333,980	$ 286,658	$ +19,262	$ 305,920	$ 382,817

A/ From NER&D Lead Table

B/ Adjustment's reflect productivity savings, GSA rent reductions, procurement reform, and Departmental General Reductions and reprogramming for Nuclear Technology R&D activities.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

SUMMARY OF CHANGES

NUCLEAR ENERGY R&D

FY 1995 Appropriation	$203,128
FY 1995 Adjustments	+ 17,018
FY 1995 Net Appropriation	$220,146

Light Water Reactors

o Completion of evolutionary design certification rulemaking started in FY 1994	+ 2,000
o Deferred level of effort for passive design certification due to extension of safety review schedule. Also, Congress added $14 million in FY 1995 for increased testing requirements and to offset NRC fees	- 11,400
o Deferred level of effort for commercial standardization program due to extension of passive plant certification schedules	- 5,689
o Continue level of effort for the Advanced Reactor Severe Accident program	0
o Extend plant life improvement program effort to support continued operation of existing plants	+ 500
o Continue level of effort for exploring solutions to other institutional impediments to the development of nuclear powerplants	0

Advanced Reactor R&D

o Terminate GT-MHR program. (Funding provided in the Termination Costs budget.) Remaining funds transferred to the new Nuclear Technology R&D decision unit	- 19,948

Space Reactor Power Systems

o Closeout of all space reactor studies and technology development; no funding requested for this activity in FY 1996	- 1,224

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SUMMARY OF CHANGES (Continued)

NUCLEAR ENERGY R&D

Advanced Radioisotope Power Systems

o Completed certain Cassini support activities in FY 1995 and continuing other mission requirements for 1997 launch	- 5,177
o Eliminates support for NASA missions beyond Cassini	- 1,400
o Provides for special purpose terrestrial nuclear power source	+ 300
o Finish processing of scrap Plutonium-238 for ultimate disposition	- 4,380

Facilities

o Funding transferred to the new Nuclear Technology R&D decision unit	- 7,027

Nuclear Technology R&D

o Supports redirection of ANL intellectual and physical resources to higher priority Departmental missions	+16,300

Program Direction

o Increase associated with escalation and field site office support previously funded by M&O contractors	+ 500

Policy and Management

o Decrease due to reduction in support contractors	- 1,7[illegible]

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

SUMMARY OF CHANGES (Continued)

NUCLEAR ENERGY R&D

TRA Hot Cell	
o Decrease due to general reduction	- 30
Oak Ridge Landlord	
o Increase due to the requirement to resume making "Payments in Lieu of Taxes" to the city of Oak Ridge, and infrastructure upgrades driven by Environment, Safety and Health compliance requirements	+ 4,433
TRA Landlord	
o Increase due to escalation	+ 41
ATR Fusion Irradiations	
o Complete transfer of the fusion irradiation programs from EBR-II to ATR	- 380
University Nuclear Science and Reactor Support	
o Support multiple university nuclear engineering programs. Program transferred from the University and Science Education Program budget	+ 6,130
FY 1996 Congressional Budget Request	$191,995

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Light Water Reactors

This program is a nationally coordinated effort to meet the goals of elimination of barriers to efficient and cost effective operation of nuclear powerplants, and maintaining exacting standards of safety in the design and operation of nuclear powerplants. The focus of this cost-shared program is to make certified standardized Advanced Light Water Reactors (ALWR) available at the earliest possible date to ensure that nuclear power is an option to contribute to the new electrical capacity projected to be required by 2010. The program performs those activities necessary to ensure that ALWR orders can be based on marketplace decisions. It demonstrates a viable Nuclear Regulatory Commission (NRC) process by certification of two advanced evolutionary light water reactor designs. It also develops and certifies more passively-safe, simplified (600 MWe) advanced BWR and advanced PWR plant concepts. This program provides for the continuation of the first-of-a-kind engineering standardization activities to produce ALWR designs. All of the above activities are being carried out in coordination with the Utilities Nuclear Power Oversight Committee's (NPOC) "Strategic Plan for Building New Nuclear Power Plants."

The Current and Advanced Light Water Reactor Safety and Licensing Support program provides technology support to the Advanced Light Water Reactor Program. It applies the results of the severe accident technology programs to the implementation of the Severe Accident Policy Statement for ALWRs to prevent severe accident issues from forestalling acceptance of ALWRs. It develops technology to support the extension of nuclear powerplant life beyond the current arbitrary 40-year licensing period. It further explores solutions to regulatory and other institutional impediments to the deployment and continued operation of nuclear powerplants.

II. A. Summary Table: Light Water Reactors

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Advanced Light Water Reactors	$ 49,454	$ 58,329	$ 43,240	$ -15,089
Current and Advanced Safety and Licensing Support	5,734	6,000	6,500	500
Total, Light Water Reactors	$ 55,188	$ 64,329	$ 49,740	$ -14,589

II. B. Laboratory and Facility Funding Table: Light Water Reactors

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 1,770	$ 1,000	$ 950	$ -50
Idaho National Engineering Lab	794	950	1,050	100
Oak Ridge National Lab	542	384	450	66
Sandia National Laboratories	4,212	3,200	3,500	300
Chicago Operations Office	27,700	26,100	26,840	740
Oak Ridge Operations Office	31	34	0	-34
Oakland Operations Office	1,878	15,600	16,400	800
Pacific Northwest Lab	40	0	0	0
All Other	18,221	17,061	550	-16,511
Total, Light Water Reactors	$ 55,188	$ 64,329	$ 49,740	$ -14,589

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Light Water Reactors			
Advanced Light Water Reactors	Receive ABWR and System 80+ final design approvals and initiate design certification rulemaking proceedings ($7,078). Continue design of AP600 and SBWR. Continue verification tests. Obtain DSER for AP600 ($11,800). Complete evaluation of the early site permit process ($390). (The above programs have a 50 percent or more cost-share contribution from industry.) ($19,268)	Continue design certification rulemaking proceedings for ABWR and System 80+ to support FY 1996 certification ($6,000). Complete verification tests to develop and defend safety analysis to support safety assessments by NRC for the AP600 and continue verification tests for the SBWR. For the AP600, respond to DSER and resolve open issues ($19,800). (The above programs have a 50 percent or more cost-share contribution from industry.) ($25,800).	Continue support of design certification rulemaking proceedings for ABWR and System 80+ if hearings are required ($8,000). Perform safety analysis and probabilistic risk assessment calculations in support of safety assessments by NRC for the AP600 and SBWR. Obtain FSER for the AP600 and initiate responses ($8,400). (The above programs have a 50 percent or more cost-share contribution from industry.) ($16,400)

III. Light Water Reactors (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Light Water Reactors (Cont'd)	Continue activities to assure commercial standardization is achieved in future powerplants. Detailed design engineering will be continued on major reactor and balance-of-plant systems: systems and components thermal/hydraulic and structural design, including design specifications and drawings, and major component procurement specifications; structural design and arrangement of plant buildings and structures, including layout, general arrangements, design of systems and structural modules; drawings, schedule, and installation specifications. Selected deliverables include: computerized plant design data model and initial issue of physical design drawings, structural equipment, mechancial calculations, general design documents, logical schematic drawings, and procurement specifications. (The above program has a 50 percent or more cost-share contribution from industry.) ($30,186).	Continue activities to assure commercial standardization is achieved in future powerplants. Detailed design engineering will be continued on remainder of selected reactor and balance-of-plant systems: systems and components thermal/hydraulic and structural design, including design specifications and drawings, pipe and cable routing, and selected component procurement specifications; structural design and arrangement of plant buildings and structures, including layout, general arrangements, and structural and seismic analyses. For the ABWR, finalize design of systems and structures modules construction plans, drawings, schedule, and installation specifications. Selected deliverables include: initial issue of physical structural and layout drawings and for the ABWR final procurement specifications and logical schematic drawings. (The above program has a 50 percent or more cost-share contribution from industry.) ($32,529)	Continue activities to assure commercial standardization is achieved in future powerplants. Complete detailed design on remainder of all reactor and balance-of-plant systems and components, including thermal/hydraulic and structural design, design specifications and drawings, pipe and cable routing, and component procurement specifications; structural design and arrangement of plant buildings and structures, including layout, general arrangements, and structural and seismic analyses. For the ABWR, complete component testing; and final detailed cost estimates. Selected deliverables for the ABWR include: final physical structural and layout drawings, detailed engineering output, and plant cost estimates and construction schedules. Selected deliverables for the AP600 include final procurement specifications and logical schematic drawings. (The above program has a 50 percent or more cost-share contribution from industry.) ($26,840)
	$ 49,454	$ 58,329	$ 43,240
Current and Advanced Safety and Licensing Support	Continue severe accident support work for the Passive Plant Final Design Approvals. Continue final documentation of revised analysis codes. Complete participation in the cooperative experimental program on debris coolability. ($2,314)	Complete severe accident support work for the Passive Plant Final Design Approvals. Continue transfer of severe accident analysis expertise from the National Laboratories to industry. Continue to participate in international R&D programs related to severe accident analysis capabilities. ($2,000)	Continue severe accident technology transfer from National Laboratories; perform analyses of severe accident prevention and mitigation measures in support of ALWR certification by NRC; assess results of international severe accident R&D programs for applicability to U.S. designs. ($2,000)

III. Light Water Reactors (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Current and Advanced Safety and Licensing Support (Cont'd)	Continue interactions with NRC and utility groups on the technical support to license renewal. Significant effort will be devoted to obtaining the technical bases for NRC drafting of final regulatory guides and a standard review plan on license renewal. ($2,126)	Continue interactions with the industry on the technical support to license extension. Significant effort will be devoted to R&D in the areas of high uncertainty identified by prospective license renewal applications with specific attention toward technical expertise available at the national laboratories. ($3,000)	Continue interactions with the industry on the technical support to license extension. Significant effort will be devoted to R&D in the areas of high uncertainty identified by prospective license renewal applications with specific attention toward technical expertise available at the national laboratories. Initiate activities to support continued operation of existing safe nuclear powerplants. ($3,500)
	Provide funds for analyses and other information; which relate to some of the economic, financial, environmental and regulatory issues facing nuclear energy; in order to ensure that design and technology programs are focused effectively. Additionally, such work supports preparation of Congressional testimony, internal planning, Departmental legislative initiative, special Department working groups, and answers to official and public inquiries. ($1,294).	Provides funds for analyses and other information; which relate to some of the economic, financial, environmental and regulatory issues facing nuclear energy; in order to ensure that design and technology programs are focused effectively. Additionally, such work supports preparation of Congressional testimony, internal planning, Departmental legislative initiatives, special Department working groups, and answers to official and public inquiries. ($1,000)	Provides funds for analyses and other information; which relate to some of the economic, financial, environmental and regulatory issues facing nuclear energy; in order to ensure that design and technology programs are focused effectively. Additionally, such work supports preparation of Congressional testimony, internal planning, Departmental legislative initiatives, special Department working groups, and answers to official and public inquiries. ($1,000)
	$ 5,734	$ 6,000	$ 6,500
Light Water Reactors	$ 55,188	$ 64,329	$ 49,740

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
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KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Advanced Reactor R&D

Consistent with FY 1995 Congessional appropriations, the Advanced Liquid Metal Reactor (ALMR) and the Integral Fast Reactor (IFR)/Actinide Recycle programs are being terminated in FY 1995. Required funding is included in the Termination Costs decision unit. Gas Turbine-Modular Helium Reactor (GT-MHR) activities will continue in FY 1995.

Recognizing the valuable intellectual and physical resources at Argonne National Laboratory (ANL), the Department has redirected ANL resources to higher priority missions in FY 1995. These missions include reactor safety, decontamination and decommissioning, and technology development for treatment of DOE spent fuels. In FY 1995, funds in this decision unit will be combined with reprogrammed and transferred funds to fully fund the safe shutdown of the EBR-II reactor and the redirection of resources formerly utilized on the IFR program to these higher priority missions. During FY 1995, the National Academy of Sciences (NAS) is performing a study evaluating the use of electrometallurgical technology, being used to treat the EBR-II fuel, as a means of treatment of other DOE spent fuels. The scope and funding required for the redirected program will depend upon the results of that study.

FY 1996 funding for the higher priority missions to be conducted at ANL is requested in the new Nuclear Technology Research and Development decision unit.

The FY 1996 budget again proposes that the GT-MHR program be terminated; required funding is requested in the Termination Costs decision unit.

II. A. Summary Table: Advanced Reactor R&D

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Gas Turbine-Modular Helium Reactor (GT-MHR).....	$ 10,485	$ 11,248	$ 0	$ -11,248
Liquid Metal Reactor (LMR).....	0	0	0	0
Integral Fast Reactor/Actinide Recycle.....	29,562	8,700	0	-8,700
Total, Advanced Reactor R&D	$ 40,047	$ 19,948	$ 0	$ -19,948

II. B. Laboratory and Facility Funding Table: Advanced Reactor R&D

Argonne National Lab (East)	$ 28,287	$ 8,700	$ 0	$ -8,700
Brookhaven National Lab	161	150	0	-150
Hanford Site	50	0	0	0
Idaho National Engineering Lab	50	60	0	-60
Lawrence Livermore National Lab	75	0	0	0
Oak Ridge National Lab	2,100	1,200	0	-1,200
Oakland Operations Office	8,578	8,584	0	-8,584

II. B. Laboratory and Facility Funding Table: Advanced Reactor R&D

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
All Other	746	1,254	0	-1,254
Total, Advanced Reactor R&D	$ 40,047	$ 19,948	$ 0	$ -19,948

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Reactor R&D			
Gas Turbine-Modular Helium Reactor (GT-MHR)	Continued research and development, and design efforts.	Continue the GT-MHR design efforts with focus on research and development of fuel and major gas-turbine components.	Terminate program consistent with NAS recommendations; funding is requested in the Termination Costs decision unit.
	$ 10,485	$ 11,248	$ 0
Liquid Metal Reactor (LMR)	Existing ALMR contract funded under Termination Costs decision unit through contract expiration.	Existing ALMR contract funded through contract expiration under Termination Costs decision unit in 1994. No further funding is requested. This is consistent with the Administration's policy to focus on nuclear research and development that has near-term commercial application.	No Activity.
	$ 0	$ 0	$ 0

III. Advanced Reactor R&D (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Integral Fast Reactor/Actinide Recycle	Continued efforts identified in Program Plan to establish the technical and economic feasibility of the metal fuel cycle. Activities included: metal fuel cycle development activities; pyrometallurgical technology development including the cooperative program with Japan's Central Research Institute for the Electric Power Industry (CRIEPI); and fuel safety demonstration. Supported licensing interactions and prepared environmental documentation for facilities; continued private sector involvement in fuel cycle activities; and continued actinide-consuming reactor plant design support.	Consistent with FY 1995 legislation, the program will be terminated and close-out activities were initiated in October 1994. The funds in this decision unit combined with reprogrammed and transferred funds in the Nuclear Technology Development R&D decision unit will be used to redirect the valuable physical and intellectual resources that were previously utilized on the Integral Fast Reactor/Actinide Recycle program at ANL-E and ANL-W. Activities will support higher priority national programs such as: technology development for treatment of DOE spent fuels, reactor safety, and decontamination and decommissioning. These activities are described in the new Nuclear Technology Research and Development decision unit.	Continue the redirected program at ANL using funds in the Nuclear Technology Research and Development decision unit. The scope and funding requirements for the redirected program will depend on the results of a NAS study evaluating the use of electrometallurgical technology, being used to treat the EBR-II fuel, as a means of treatment of other DOE spent fuels.
	Continued efforts to demonstrate the potential of actinide recycle technologies to expand the useable capacity of spent fuel repositories.		
	$ 29,562	$ 8,700	$ 0
Advanced Reactor R&D	$ 40,047	$ 19,948	$ 0

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Space Reactor Power Systems

This activity is to fulfill DOE's charter under the Atomic Energy Act to support other Federal agencies in the design, development, production, and testing of reactor power systems for space and special purpose terrestrial applications and nuclear reactor propulsion systems for space applications.

Though numerous NASA and DOD applications and some industrial applications have been suggested, no agency or segment of private industry has made a commitment to a space mission using a space reactor system. Therefore, no funding is requested for this activity in FY 1996. The two recent DOE space reactor power systems development programs, the SP-100 and the DOE thermionic space reactor power system efforts, are being closed out in FY 1994. This happened primarily due to changes in customers' mission needs and budget priorities. Through FY 1995, DOE will fund studies and limited technology development that would be used to support potential NASA, DOD, and commercial missions.

II. A. Summary Table: Space Reactor Power Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
SP-100 Space Reactor	$ 17,095	$ 0	$ 0	$ 0
Thermionic Reactors	4,508	0	0	0
Space Reactor Power Systems	4,925	1,224	0	-1,224
Total, Space Reactor Power Systems	$ 26,528	$ 1,224	$ 0	$ -1,224

II. B. Laboratory and Facility Funding Table: Space Reactor Power Systems

Energy Technology Engineering Center	$ 162	$ 0	$ 0	$ 0
Hanford Site	3,443	0	0	0
Los Alamos National Laboratory	2,803	40	0	-40
Oak Ridge National Lab	325	0	0	0
Sandia National Laboratories	396	20	0	-20
All Other	19,399	1,164	0	-1,164
Total, Space Reactor Power Systems	$ 26,528	$ 1,224	$ 0	$ -1,224

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Space Reactor Power Systems			
SP-100 Space Reactor	During FY 1994 the SP-100 Space Reactor Program is being closed out.	Complete contract closeout activities using prior year funds.	No Activity.($0)
	The SP-100 contract with the Martin Marietta Corporation is being terminated, with technical activities brought to an orderly conclusion, program documentation completed, and provisions made to cover government liabilities associated with the early closure of the contract. Activities associated with the SP-100 program at the DOE laboratories are being brought to an orderly conclusion and documented. In addition, facility maintenance and cleanup activities are being conducted at the Los Alamos National Laboratory and the Hanford site.($17,095)	No Activity.($0)	No Activity.($0)
	$ 17,095	$ 0	$ 0
Thermionic Reactors	During FY 1994, the Thermionic Fuel Element Verification program is being brought to a close. Technical oversight and management of two system design and technology demonstration contracts funded by DOD is being continued.	Using prior year funding complete examination and disposal of test articles and disposal of low level waste.	No Activity.($0)

III. Space Reactor Power Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Thermionic Reactors (Cont'd)	Exercise contract closeout option. Complete irradiation of thermionic components in TRIGA reactor; decommission TRIGA reactor and fabrication laboratories. Perform post-irradiation examinations on thermionic components and report results; dispose of all irradiated test articles. Complete system design and technology development activities. Provide technical and programmatic oversight of examination activities and of system design and technology development activities. ($4,508).	No Activity.($0)	No Activity.($0)
	No Activity.($0)	No Activity.($0)	No Activity.($0)
	$ 4,508	$ 0	$ 0
Space Reactor Power Systems	Conduct studies on space reactor power and propulsion systems and technology development to support potential NASA, DOD and commercial interests. Included is technical and management support for DOD bimodal efforts. ($4,925)	Conduct studies on space reactor power and propulsion systems and technology development to support potential NASA, DOD and commerical interests. Provide facility maintenance to satisfy obligations from previous programs, manage DOD funded thermionic contracts, participate in United Nations and national policy support, continue study of space reactor power systems for high power satellite communications, and provide technical and management support of Air Force bimodal program. ($1,224)	Manage DOD funded space nuclear power contracts and support Air Force bimodal program.
	$ 4,925	$ 1,224	$ 0
Space Reactor Power Systems	$ 26,528	$ 1,224	$ 0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Advanced Radioisotope Power Systems

This activity provides support for radioisotope power source development, demonstration, testing, and delivery. Radioisotope power sources are the enabling technology for space and terrestrial applications requiring proven, reliable and maintenance-free power supplies capable of producing up to several kilowatts of power and operating under severe environmental conditions for many years. Previous missions that have used radioisotope power sources include the Apollo lunar surface scientific packages, Pioneer, Viking, Voyager, Galileo, and Ulysses spacecraft.

Program focus is on mission requirements of the National Aeronautics and Space Administration (NASA), Department of Defense (DOD) and other agencies. Projects are conducted with these agencies in accordance with Memoranda of Understanding and are dependent upon cost sharing by the user agencies. Support is provided to maintain fabrication and safety testing activities for NASA's Cassini mission, scheduled for launch in 1997. Delivery of three new radioisotope thermoelectric generators (RTGs) and a requalified existing spare unit to the launch site six months prior to launch is required. Production activities for the Cassini RTGs were initiated in FY 1990. Also provided is support for on-going special purpose terrestrial power sources utilized by other Federal agencies. This activity also supports the acquisition and processing of the required Plutonium-238 fuel. The Advanced Radioisotope Power Systems program maintains the sole national capability and facilities to produce radioisotope power systems. This request provides for maintenance of facilities and skilled personnel; modernization and upgrades as required; and provides funding for generic nuclear energy studies, evaluations and safety support.

II. A. Summary Table: Advancod Radioisotope Power Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Radioisotope Thermoelectric Generators (RTGs)....	$ 30,903	$ 45,014	$ 38,437	$ -6,577
Special Applications.....	1,000	1,500	1,800	300
Plutonium-238 Acquisition & Processing.....	19,200	13,380	9,000	-4,380
Total, Advanced Radioisotope Power Systems	$ 51,103	$ 59,894	$ 49,237	$ -10,657

II. B. Laboratory and Facility Funding Table: Advanced Radioisotope Power Systems

Ames Lab	$ 360	$ 340	$ 350	$ 10
Hanford Site	2,495	5,495	1,750	-3,745
Los Alamos National Laboratory	7,483	12,595	9,900	-2,695
Mound Plant	6,041	7,685	7,100	-585
Oak Ridge National Lab	3,913	5,310	4,700	-610
Savannah River Site	11,472	13,980	9,700	-4,280
All Other	19,339	14,489	15,737	1,248
Total, Advanced Radioisotope Power Systems	$ 51,103	$ 59,894	$ 49,237	$ -10,657

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Radioisotope Power Systems			
Radioisotope Thermoelectric Generators (RTGs)	Issue Cassini Preliminary Risk Assessment to support preparation of NASA final Cassini EIS. Prepare and issue Preliminary Cassini Safety Analysis Report. Continue the safety test program. Continue support of Cassini Safety Databook for the TitanIV/Centaur launch vehicle. Continue quality assurance and management oversight of fabrication of electrical flight converters. Support engineering and technical interface reviews with Jet Propulsion Laboratory and Kennedy Space Center.($15,750)	Continue the safety test program at LANL and other sites. Support safety committee reviews of the Preliminary Safety Analysis Report. Continue quality assurance and management oversight of fabrication of electrical flight converters. Support engineering and technical interface reviews with Jet Propulsion Laboratory, Kennedy Space Center and NASA Headquarters.($17,630)	Continue the safety test program for Cassini at LANL and other sites. Initiate preparation of the Final Safety Analysis Report. Support safety committee reviews of test program and preparation of the Safety Analysis Reports. Continue quality assurance and management oversite of fabrication of electrical flight converters. Support engineering and technical interface reviews with Jet Propulsion Laboratory, Kennedy Space Center, and NASA Headquarters. Support Cassini ground operations and emergency response planning activities at Kennedy Space Center.($18,100)
	Continue to maintain facility infrastructure and fuel pellet fabrication and encapsulation of flight quality fuel pellets for Cassini RTGs and heater units. Continue assembly of General Purpose Heat Source blocks for use in safety test program for Cassini.($5,740)	Continue to maintain facility infrastructure and fuel pellet fabrication and encapsulation of flight quality fuel pellets for Cassini RTGs and heater units. Continue assembly of General Purpose Heat Source blocks and initiate assembly of first RTG for Cassini.($12,080)	Maintain facility infrastructure for fabrication and encapsulation of flight quality fuel pellets for Cassini RTGs. Continue assembly of General Purpose Heat Source blocks and complete assembly and testing of the first RTG, initiate assembly and testing of the second and third RTG.($9,200)
	Provide mission support through system evaluation and design, safety analysis, and testing. Provide reliability and quality assurance oversight. Operate and maintain essential facilities including heat source production, assembly, and checkout support. Maintain the Plutonium Fuel Fabrication Facility (PuFF) in a safe and environmentally acceptable condition. Continue construction of a new shipping container under new certificate of compliance.($7,668)	Provide mission support through system evaluation and design, safety analysis, and testing. Provide reliability and quality assurance oversight. Operate and maintain essential facilities including heat source production, assembly, and checkout support. Maintain the Plutonium Fuel Fabrication Facility (PuFF) in a safe and environmentally acceptable condition until transfer to EM. Complete regulatory tests and continue construction of a new shipping container under new certificate of compliance.($12,050)	Provide mission support through system design and evaluation, safety analysis, and testing. Provide reliability and quality assurance oversite. Operate and maintain essential facilities including heat source production, assembly and checkout support. Maintain the Plutonium Fuel Fabrication Facility (PuFF) in a safe and environmentally acceptable condition until transfer to EM. Submit Safety Analysis Report for Packaging for regulatory review for the new shipping container under new certificate of compliance.($10,237)

III. Advanced Radioisotope Power Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Radioisotope Thermoelectric Generators (RTGs) (Cont'd)	No Activity.($0)	Fabricate radioisotope heater units in FY 1995 for the MARS Pathfinder mission.($1,400)	No Activity.($0)
	Procurement of RTG capital equipment.($1,745)	Procurement of RTG capital equipment.($1,854)	Procurement of RTG capital equipment.($900)
	$ 30,903	$ 45,014	$ 38,437
Special Applications	Maintain special applications power source capability, including development of a heat source for a 60-watt program. Continue construction of a new shipping container under new certificate of compliance.($1,000)	Maintain special applications power source capability, including development of a heat source for a 60-watt program. Continue construction of a new shipping container under new certificate of compliance.($1,500)	Maintain special applications power source capability. Continue to support the 60-watt heat source program. Support construction and the regulatory process for the new shipping container under new certificate of compliance. ($1,800)
	$ 1,000	$ 1,500	$ 1,800
Plutonium-238 Acquisition & Processing	Continue processing operations in support of NASA cassini program.($14,000)	Continue processing operations in support of NASA Cassini mission and process scrap in the United States inventory to a form suitable for use for future NASA and DOD missions.($13,380)	Complete processing of scrap Plutonium-238 for ultimate disposition. ($9,000)
	Reprogramming provided $5,200,000 toward $6,000,000 purchase of up to 5 kilograms of Pu-238 from Russia.($5,200)	No Activity.($0)	No Activity.($0)
	$ 19,200	$ 13,380	$ 9,000
Advanced Radioisotope Power Systems	$ 51,103	$ 59,894	$ 49,237

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Facilities

The funding provided in FY 1994 and FY 1995 in the Facilities budget covers Fuel Cycle Facility (FCF) and Analytical Laboratory (AL) modifications and operations to support shutdown of the Experimental Breeder Reactor (EBR-II) by treating the blanket assemblies and irradiated fuel to place the fuel into a storable form. Funding for FCF and AL operations in FY 1996 is requested in the Termination Costs decision unit. In FY 1995, funds in this decision unit will be combined with reprogrammed and transferred funds to fully fund the safe shutdown of the EBR-II reactor and the redirection of resources formerly utilized on the Integral Fast Reactor (IFR) program to these higher priority missions.

II. A. Summary Table: Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Laboratory	$ 6,455	$ 7,027	$ 0	$ -7,027
Total, Facilities	$ 6,455	$ 7,027	$ 0	$ -7,027

II. B. Laboratory and Facility Funding Table: Facilities

Argonne National Lab (West)	$ 6,455	$ 7,027	$ 0	$ -7,027
Total, Facilities	$ 6,455	$ 7,027	$ 0	$ -7,027

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facilities			
Argonne National Laboratory	At FCF, continued facility modifications to support treatment of EBR-II blanket assemblies and irradiated fuel for placement into a storable form. Continued to develop processes to support handling and storage of waste from FCF operations.	At FCF, initiate treatment of EBR-II blanket assemblies and irradiated fuel to place the fuel into a storable form.	Continue treatment of EBR-II blanket assemblies and irradiated fuel. Funding provided under the Termination Costs decision unit.
	Continued AL modifications to provide the capability to perform chemical analyses on radioactive process materials to support FCF operations.	Initiate chemical analysis on radioactive process materials in AL to support FCF operations for treatment of EBR-II blanket assemblies and irradiated fuel. The funds in this decision unit combined with reprogrammed and transferred funds in the Nuclear Technology Development R&D decision unit will be used to fully fund the safe shutdown of the EBR-II reactor and redirect the valuable physical and intellectual resources that were previously utilized on the IFR/Actinide Recycle program at ANL-E and ANL-W. Activities will support higher priority national programs such as: technology development for treatment of DOE spent fuels, reactor safety, and decontamination and decommissioning. These activities are described in the new Nuclear Technology Research and Development decision unit.	Continue performing chemical analyses on radioactive process materials in AL to support FCF operations for treatment of EBR-II blanket assemblies and irradiated fuel. Funding provided under the Termination Costs decision unit.
	$ 6,455	$ 7,027	$ 0
Facilities	$ 6,455	$ 7,027	$ 0

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Nuclear Technology Research and Development

The Nuclear Technology Research and Development decision unit is being created within the Nuclear Energy R&D budget to cover the redirection of valuable intellectual and physical resources at Argonne National Laboratory (ANL) to higher priority missions of the Department. These missions include reactor safety, decontamination and decommissioning, and technology development for treatement of DOE spent fuels.

In FY 1995, reprogrammed and transferred funds combined with funds in the Advanced Reactor R&D and Facilities decision units will be used to fully fund the safe shutdown of the EBR-II reactor and the redirection of resources formerly used on the IFR program to these higher priority missions of the Department.

During FY 1995, the National Academy of Sciences (NAS) is performing a study evaluating the use of electrometallurgical technology, being used to treat the EBR-II fuel, as a means of treatment of other DOE spent fuels. The scope and funding required for the redirected program will depend upon the results of that study.

II. A. Summary Table: Nuclear Technology Research and Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Laboratory	$ 0	$ 21,000	$ 35,950	$ 14,950
Other	0	0	1,350	1,350
Total, Nuclear Technology Research and Development	$ 0	$ 21,000	$ 37,300	$ 16,300

II. B. Laboratory and Facility Funding Table: Nuclear Technology Research and Development

Argonne National Lab (East)	$ 0	$ 20,500	$ 33,600	$ 13,100
Argonne National Lab (West)	0	500	2,350	1,850
All Other	0	0	1,350	1,350
Total, Nuclear Technology Research and Development	$ 0	$ 21,000	$ 37,300	$ 16,300

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Technology Research and Development			
Argonne National Laboratory	No Activity.	Reprogrammed and transferred funds combined with additional funding provided from the Advanced Reactor R&D and Facilities decision units are being used to fully fund the safe shutdown of the EBR-II reactor and redirect the valuable physical and intellectual resources that were previously utilized on the Integral Fast Reactor/Actinide Recycle program at ANL-E and ANL-W. Activities being conducted in support of higher priority national programs include: Research and development of electrometallurgical techinques, being used to treat the EBR-II fuel, as a means of treatment of other DOE spent fuels. Continue technology development activities contingent upon a favorable NAS recommendation.($10,000) Activities to assist in improving nuclear safety in the countries operating Soviet-designed reactors, working in collaboration with organizations in these countries. Major tasks to be pursued included: development of R&D collaborations in safety technology, development of a database of nuclear safety-related information, and performance of analysis using state-of-the-art codes, plant models, and safety technology. Also, conduct light water reactor safety support activities for U.S. utilities.($8,000) Activities to transfer technology from work on EBR-II and to develop	Continue the higher priority missions at ANL. The scope and funding requirements for the redirected program will depend on the results of a NAS study evaluating the use of electrometallurgical technology, being used to treat the EBR-II fuel, as a means of treatment of other DOE spent fuels. Increase in FY 1996 reflects reallocation of funds from the Advanced Reactor R&D and Facilities decision units to the Nuclear Technology R&D and Termination Costs decision units .

III. Nuclear Technology Research and Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Argonne National Laboratory (Cont'd)		decontamination technology for DOE facilities used in fuel cycle activities.($3,000) Support of the NAS study evaluating the use of electrometallurgical technology as a means of treatment of other DOE spent fuels. Operate ANL facilities as required to support the activities described above. EBR-II and TREAT will remain shut down.	
	$ 0	$ 21,000	$ 35,950
Other	No Activity.	No Activity.	Conduct studies, evaluations, and management support activities. ($1,350)
	$ 0	$ 0	$ 1,350
Nuclear Technology Research and Development	$ 0	$ 21,000	$ 37,300

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Program Direction

The requested program direction funding provides for a staffing level commensurate with the restructured advanced nuclear research and development programs. The FY 1996 budget request reflects Headquarters and Operations office manpower requirements as deemed necessary to provide the technical direction to Nuclear Energy Research and Development activities, nuclear operations in support of the Office of Energy Research programs, and activities involving other Federal agencies, the nuclear industry and foreign governments.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 8,773	$ 7,265	$ 7,045	$ -220
Benefits	1,612	1,505	1,485	-20
Travel	468	580	575	-5
Other Expenses	291	3,150	3,895	745
Total, Program Direction	$ 11,144	$ 12,500	$ 13,000	$ 500

II. B. Laboratory and Facility Funding Table: Program Direction

Chicago Operations Office	$ 985	$ 1,280	$ 1,355	$ 75
Idaho Operations Office	65	105	115	10
Oak Ridge Operations Office	1,165	1,280	1,750	470
Oakland Operations Office	478	510	555	45
Richland Operations Office	632	550	665	115
Washington Headquarters	7,819	8,775	8,560	-215
Total, Program Direction	$ 11,144	$ 12,500	$ 13,000	$ 500

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Personnel Compensation	This activity includes salaries and awards for Nuclear Energy headquarters FTEs and Operations office FTEs to provide technical direction to Nuclear Energy R&D activities, nuclear operations in support of the Office of Energy Research programs, and activities involving other Federal agencies, the nuclear industry and foreign governments.	This activity includes salaries and awards for Nuclear Energy headquarters FTEs and Operations office FTEs to provide technical direction to Nuclear Energy R&D activities, nuclear operations in support of the Office of Energy Research programs, and activities involving other Federal agencies, the nuclear industry and foreign governments.	This activity includes salaries and awards for Nuclear Energy headquarters FTEs and Operations office FTEs to provide technical direction to Nuclear Energy R&D activities, nuclear operations in support of the Office of Energy Research programs, and activities involving other Federal agencies, the nuclear industry and foreign governments.
	137.0 FTE $ 8,773	104.0 FTE $ 7,265	97.0 FTE $ 7,045
Benefits	This activity includes Civil Service Retirement System (CSRS) employee's personnel benefits and Federal Employee Retirement System (FERS) employee's personnel benefits.	This activity includes Civil Service Retirement System (CSRS) employee's personnel benefits and Federal Employee Retirement System (FERS) employee's personnel benefits.	This activity includes Civil Service Retirement System (CSRS) employee's personnel benefits and Federal Employee Retirement System (FERS) employee's personnel benefits.
	$ 1,612	$ 1,505	$ 1,485
Travel	This activity includes funds for official business travel, invitational travel and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters and other allowable relocation expenses.	This activity includes funds for official business travel, invitational travel and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters and other allowable relocation expenses.	This activity includes funds for official business travel, invitational travel and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters and other allowable relocation expenses.
	$ 468	$ 580	$ 575

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Expenses	This activity includes funds for miscellaneous supplies or services (including contractor support services) for FTEs to perform their jobs both at Headquarters and at the Operations office.	This activity includes funds for miscellaneous supplies or services (including contractor support services) for FTEs to perform their jobs both at Headquarters and at the Operations office.	This activity includes funds for miscellaneous supplies or services (including contractor support services) for FTEs to perform their jobs both at Headquarters and at the Operations office, and university activities including Historically Black Colleges and Universities. Also funding is included for those Operations office FTEs located at a Management and Operating (M&O) contractor sites. This support includes materials and supplies, furniture, ADP equipment and software, vehicles, and miscellaneous support such as vehicle and equipment maintenance.
	$ 291	$ 3,150	$ 3,895
Program Direction	137.0 FTE $ 11,144	104.0 FTE $ 12,500	97.0 FTE $ 13,000

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
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KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Test Reactor Area Hot Cells

The Test Reactor Area (TRA) Hot Cells at the Idaho National Engineering Laboratory (INEL) are maintained in an operational status to support production of isotopes for medical and industrial applications and other programs. Services available to users for irradiated experiments and isotopes produced in the Advanced Test Reactor (ATR) or other facilities include disassembly, processing, and preparation for shipment. Photographic, Metallographic and Scanning Electron Microscope examinations and analysis of irradiated material can also be conducted as required by program sponsors.

II. A. Summary Table: Test Reactor Area Hot Cells

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Idaho National Engineering Laboratory (INEL).....	$ 1,311	$ 1,430	$ 1,400	$ -30
Total, Test Reactor Area Hot Cells	$ 1,311	$ 1,430	$ 1,400	$ -30

II. B. Laboratory and Facility Funding Table: Test Reactor Area Hot Cells

Idaho National Engineering Lab	$ 1,289	$ 1,390	$ 1,400	$ 10
All Other	22	40	0	-40
Total, Test Reactor Area Hot Cells	$ 1,311	$ 1,430	$ 1,400	$ -30

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Test Reactor Area Hot Cells			
Idaho National Engineering Laboratory (INEL)	Continued to operate the TRA Hot Cells to support medical isotope and other user programs. Ensured that the operation and maintenance of the Hot Cells are in compliance with safety and environmental protection standards. ($1,175)	Continue to operate the TRA Hot Cells to support medical isotope and other user programs. Ensure that the operation and maintenance of the Hot Cells are in compliance with safety and environmental protection standards. ($1,230)	Continue to operate the TRA Hot Cells to support medical isotope and other user programs. Ensure that the operation and maintenance of the Hot Cells are in compliance with safety and environmental protection standards. ($1,200)
	Procured and installed equipment and hardware to maintain the safety and reliability of the Hot Cells. ($136)	Procure and install equipment and hardware to maintain the safety and reliability of the Hot Cells. ($200)	Procure and install equipment and hardware to maintain the safety and reliability of the Hot Cells. ($200)
	$ 1,311	$ 1,430	$ 1,400
Test Reactor Area Hot Cells	$ 1,311	$ 1,430	$ 1,400

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(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: Oak Ridge Landlord

This activity provides for centralized Oak Ridge Operations Office infrastructure requirements and general operating costs essential to maintaining a viable functioning field office. Prior to FY 1994, these requirements were funded through an overhead assessment to DOE.

II. A. Summary Table: Oak Ridge Landlord

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expense	$ 15,304	$ 10,016	$ 12,449	$ 2,433
Capital Equipment	651	1,981	2,981	1,000
Construction	8,251	2,255	3,255	1,000
Total, Oak Ridge Landlord	$ 24,206	$ 14,252	$ 18,685	$ 4,433

II. B. Laboratory and Facility Funding Table: Oak Ridge Landlord

Oak Ridge Operations Office	$ 24,206	$ 14,252	$ 18,685	$ 4,433
Total, Oak Ridge Landlord	24,206	14,252	18,665	4,433

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge Landlord			
Operating Expense	Included in this function are activities such as: environmental, safety and health upgrades to, and maintenance of, the 40-year old water plant operated by Oak Ridge Operations Office which provides potable water for all Oak Ridge facilities and the city of Oak Ridge. This function is carried out in accordance with applicable laws and regulations (e.g. Occupational Safety and Health Act, National Environmental Policy Act, the Safety Drinking Water Act); operation of the emergency operations center which is responsible for emergency management at Oak Ridge as required by Departmental orders and Federal laws and regulations; maintenance of roads and grounds outside the plant-fenced areas of the Oak Ridge reservation; litigation expenses required by contract for the continuing defense of lawsuits against the former operating contractor of the Oak Ridge facilities; physical security including around-the-clock protective forces for Oak Ridge facilities and administrative areas; operation of the Museum of Science and Energy; and selected environmental safety and health and quality assurance compliance activities required to assure that facilities are in compliance with Departmental orders and state regulations and to assure continuing compliance.	Included in this function is minimal funding for activities such as; environmental, safety and health upgrades of the 40-year old water plant operated by Oak Ridge Operations Office (ORO) which provides potable water for all Oak Ridge facilities and the city of Oak Ridge. This function is carried out in accordance with applicable laws and regulations (e.g. Occupational Safety and Health Act, National Environmental Policy Act (NEPA), and the Safe Drinking Water Act). Also included are support to the Directives Management Group in coordinating and editing ORO directives, soliciting and consolidating comments on draft directives, coordinating the review of contractor implementation and corrective action plans, and other activities related to DOE directive and orders; training and development activities including oversight of contractor training, implementation of the Defense Nuclear Facilities Safety Board training recommendations, Federal technical training, human resources development, and needs analysis support; continual operation of a reading room established in support of the Secretary's openness initiatives; operation of the emergency operations center which is responsible for emergency management at Oak Ridge as required by Departmental orders and Federal laws and regulation; maintenance of roads and ground outside the plant-fenced areas of the Oak Ridge reservation; physical security including around-the-clock protective forces for Oak Ridge facilities and administrative areas; operation of the Museum of Science and Energy; and	Included in this function is funding for activities such as environmental, safety, and health upgrades of the 40-year old water plant operated by Oak Ridge Operations Office (ORO) which provides potable water for all Oak Ridge facilities and the City of Oak Ridge. This function is carried out in accordance with applicable laws and regulation (e.g. Occupational Safety and Health Act, National Environmental Policy Act (NEPA), and the Safe Drinking Water Act). Also included are support to the Directives Management Group in coordinating and editing ORO directives, soliciting and consolidating comments on draft directives, coordinating the review of contractor implementation and corrective action plans, and other activities related to DOE directives and orders; training and development activities including oversight of contractor training, implementation of the Defense Nuclear Facilities Safety Board (DNFSB) training recommendations, Federal technical training, human resources development, and needs analysis support; operation of the Museum of Science and Energy; physical security including around-the-clock protective forces for Oak Ridge facilities and administrative areas; maintenance of roads and grounds outside the plant-fenced areas of the Oak Ridge reservation; and FY 1996 payment in lieu of taxes which will be due to the local community as this program is reinstituted effective October 1, 1995 (there was a 10-year buyout in 1985). Minimal funding is included for operation of the Emergency Operations Center which is responsible

III. Oak Ridge Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expense (Cont'd)		selected environmental safety and health and quality assurance compliance activities at MK Ferguson and other DOE-owned facilities required to assure compliance with Departmental orders and state regulations. Output will be measured by completion of cost and schedule milestones for water plant upgrades.	for emergency management at Oak Ridge as required by Departmental orders and Federal laws and regulations; and selected environmental safety and health and quality assurance compliance activities at MK-Ferguson Company and other DOE-owned facilities required to assure compliance with Departmental orders and state regulations. Output will be measured by completion of cost and schedule milestones.
	$ 15,304	$ 10,016	$ 12,449
Capital Equipment	Includes funds for new and phased replacement of existing ADP and other equipment necessary for compliance with Emergency Operations Center compatibility requirements; upgrades to support a classified operational mode and phased replacement of emergency response vehicles; ongoing replacement of various pieces of equipment used for the water plant functions.	Includes funds for new and phased replacement of existing ADP communications, and other equipment necessary for compliance with Emergency Operations Center compatibility requirements; the ongoing replacement of various pieces of equipment used for the water plant functions and for MK-Ferguson Company of Oak Ridge; and the phased replacement of a portion of the motor vehicle fleet, as well as the replacement of some of the shop fabrication equipment for MK-Ferguson Company of Oak Ridge, who is the construction manager for Oak Ridge Operations Office. Much of the shop fabrication equipment, as well as a majority of the motor vehicles in MK-Ferguson's motor vehicle fleet are outdated and require significant maintenance. Updating the motor vehicle fleet is critical to MK-Ferguson's performance as construction manager, and updating the shop equipment is essential to expand fabrication capability and reduce required man-hours to support construction. Output will be measure by replacement of 50 percent of fleet.	Includes funds for new and phased replacement of existing ADP, communications, and other equipment necessary for compliance with Emergency Operations Center compatibility requirements, as well as for upgrades to the existing alarm system at ORO. Also includes approximately one-half of the required funding for the ongoing replacement of various pieces of equipment for the water plant, roads and grounds maintenance, and MK-Ferguson and Johnson Controls facilities maintenance. This replacement equipment includes salt trucks, mowers, tractors, turbine pumps and motors, cranes, testing and monitoring equipment for hazardous material, trailers for document storage, shop and fabrication equipment, and other miscellaneous equipment. Includes minimal funding for replacement vehicles for MK-Ferguson and Johnson Controls.

III. Oak Ridge Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	$ 651	$ 1,981	$ 2,981
Construction	Includes replacement or upgrade of various facilities relating to the water plant facilities and other facilities which house Federal and contractor employees; and the design, construction and renovation of the out-dated Oak Ridge telephone switching system to meet security requirements and to accommodate present-day computing resources.	Includes replacement or upgrade of various facilities relating to the water plant facilities and other facilities which house Federal and contractor employees. This includes installation of modernized controls at the water plant and renovation of office space at MK-Ferguson Company of Oak Ridge, which is essential to house FTEs brought on board to support increased DOE requirements, such as, an expanded Health Physic role, DNFSB Compliance activities, and the implementation of an Occupational Medicine Program.	Includes funding for upgrades to the water plant and other DOE-owned facilities, including the replacement of existing lighting and upgrades of the electrical power center and distribution breaker panels in Building 1916T2; the installation of automated controls at the water plant which would automatically start and synchronize an emergency power generator in the event of a power failure; the co-location of procurement offices which will save time in purchasing, warehousing, and receiving operations; the construction of a wash rack for the Heavy Equipment Shop at the water plant; and sprinkler upgrades and soundproofing of facilities. Also includes approximately one-half of the required funding for upgrades and modifications to facilities at MK-Ferguson, such as upgrades to the Training Center including adequate lighting, HVAC systems, restroom facilities and ADA-approved building access; the establishment of areas to accommodate the storage and reuse of tools that are within tolerable contamination limits to reduce the costs associated with decontamination and replacement and to support implementation of MK-F's Radiation Control Procedures; the consolidation of staff, shop operations, and subcontractor staging areas to provide control of activities and promote communications; and improvements to subcontractor staging areas to enhance safety and security and provide better control and management of subcontractor operations.

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III. Oak Ridge Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction (Cont'd)	$ 8,251	$ 2,255	$ 3,255
Oak Ridge Landlord	$ 24,206	$ 14,252	$ 18,685

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TRA LANDLORD

I. Preface: TRA Landlord

Landlord activities at the Test Reactor Area (TRA) at the Idaho National Engineering Laboratory have previously been funded by the Office of Environmental Restoration and Waste Management (EM). The Office of Nuclear Energy (NE) assumed funding and management responsibility for these activities starting in FY 1995. TRA Landlord activities include operating support, equipment procurement, General Plant Projects (GPP), and Line Item Capital Projects (LICP), to ensure the safety and reliability of TRA site facilities.

II. A. Summary Table: TRA Landlord

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
TRA Landlord	$ 0	$ 3,959	$ 4,000	$ 41
Total, TRA Landlord	$ 0	$ 3,959	$ 4,000	$ 41

II. B. Laboratory and Facility Funding Table: TRA Landlord

Idaho National Engineering Lab	$ 0	$ 3,921	$ 4,000	$ 79
All Other	0	38	0	-38
Total, TRA Landlord	$ 0	$ 3,959	$ 4,000	$ 41

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
TRA Landlord	Funded by EM.	Conduct landlord operating support activities including planning, readiness reviews, training, and system operational testing of landlord funded GPP and Line Item projects at TRA. Correct ES&H deficiencies identified during inspections and self-assessments. ($1,487)	Conduct landlord operating support activities including planning, readiness reviews, training, and system operational testing of landlord funded GPP and Line Item projects at TRA. Correct ES&H deficiencies identified during inspections and self-assessments. Provide surveillance and maintenance of spent nuclear fuel storage areas. ($1,085)
		No Activity.	Procure and install equipment to support TRA site facilities. ($285)
		Provide GPP funding to support TRA site activities. ($750)	Provide GPP funding to support TRA site activities. ($730)
		Provide Line Item funding for fire protection and life safety improvements at TRA including replacement of deficient fire barriers and addition of automatic fire suppression systems to meet applicable codes, modification of existing HVAC systems, expansion of fire detection systems, and addition of redundant water supply. ($1,722)	Provide Line Item funding for fire protection and life safety improvements at TRA including replacement of deficient fire barriers and addition of automatic fire suppression systems to meet applicable codes, modification of existing HVAC systems, expansion of fire detection systems, and addition of a redundant water supply. ($1,900)
	$ 0	$ 3,959	$ 4,000
TRA Landlord			
	$ 0	$ 3,959	$ 4,000

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DEPARTMENT OF ENERGY
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(dollars in thousands)

KEY ACTIVITY SUMMARY

ATR FUSION IRRADIATIONS

I. Preface: ATR FUSION IRRADIATIONS

This activity provides for the planned transfer of irradiations in support of the Department of Energy (DOE)/Monbusho Fusion Energy program to the Advanced Test Reactor (ATR). This program was being conducted in the Fast Flux Test Facility when it was placed in standby on April 1, 1992. The DOE/Monbusho irradiations were subsequently planned for transfer to the Experimental Breeder Reactor-II (EBR-II) for completion. With the proposed shutdown of EBR-II, the irradiation programs are planned to be transferred to the ATR.

II. A. Summary Table: ATR FUSION IRRADIATIONS

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ATR FUSION IRRADIATIONS	$ 0	$ 2,683	$ 2,303	$ -380
Total, ATR FUSION IRRADIATIONS	$ 0	$ 2,683	$ 2,303	$ -380

II. B. Laboratory and Facility Funding Table: ATR FUSION IRRADIATIONS

Idaho National Engineering Lab	$ 0	$ 1,707	$ 2,303	$ 596
All Other	0	976	0	-976
Total, ATR FUSION IRRADIATIONS	$ 0	$ 2,683	$ 2,303	$ -380

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
ATR FUSION IRRADIATIONS	No Activity.	Provides funding for the planned transfer of the fusion irradiation program to ATR. Activities include design, fabrication, and installation of an irradiation test assembly into ATR.	Continue activities necessary to transfer the fusion irradiation program to ATR.
	$ 0	$ 2,683	$ 2,303
ATR FUSION IRRADIATIONS	$ 0	$ 2,683	$ 2,303

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR ENERGY R&D

I. Preface: University Nuclear Science and Reactor Support

This new Decision Unit within Nuclear Energy R&D provides support for university nuclear science activities and research reactors previously funded under the Reactor Fuel Assistance Program within the Office of Science Education and Technical Information.

The University Nuclear Science and Reactor Support program provides funding towards maintaining the availability of university reactors for the conduct of scientific research, education, and training. Support is provided through the supply of fresh fuel, transport of spent fuel, conversion of Highly Enriched Uranium (HEU) fuel cores to Low Enrichment Uranium (LEU) fuel, and funding for reactor safety maintenance activities.

The University Nuclear Science and Reactor Support program also provides funding for education and research groups to help maintain a stable human resource base in the nuclear sciences. The nuclear sciences are an important contributor to the expanding environmental restoration, health, medicine, and research areas, as well as to traditional nuclear power areas.

II. A. Summary Table: University Nuclear Science and Reactor Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
University Nuclear Science and Reactor Support...	$ 0	$ 0	$ 6,130	$ 6,130
Total, University Nuclear Science and Reactor Support	$ 0	$ 0	$ 6,130	$ 6,130

II. B. Laboratory and Facility Funding Table: University Nuclear Science and Reactor Support

Idaho National Engineering Lab	$ 0	$ 0	$ 2,700	$ 2,700
All Other	0	0	3,430	3,430
Total, University Nuclear Science and Reactor Support	$ 0	$ 0	$ 6,130	$ 6,130

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
University Nuclear Science and Reactor Support			
University Nuclear Science and Reactor Support	This activity was previously budgeted in the University and Science Education Program budget.	This activity was previously budgeted in the University and Science Education Program budget.	Supply fresh fuel to, and transport spent fuel from, university reactors through the University Reactor Fuel Assistance Program, Support the conversion of university reactors from HEU to LEU fuel. Support university reactor safety maintenance upgrades. Provide fellowships for about 30 outstanding and promising United States M.S. and Ph.D. students. Provide 50/50 cost-shared research grants to university nuclear engineering programs through the DOE-Utility Matching Grants Program. Promote the use of University reactors for scientific research and education by neighboring academic institutions through the Reactor Sharing Program.
	$ 0	$ 0	$ 6,130
University Nuclear Science and Reactor Support	$ 0	$ 0	$ 6,130

OVERVIEW

TERMINATION COSTS

Consistent with FY 1995 Congressional appropriations legislation the Advanced Liquid Metal Reactor (ALMR), and the Integral Fast Reactor (IFR)/Actinide Recycle programs are being terminated in FY 1995. The FY 1996 budget proposes that the Gas Turbine-Modular Helium Reactor (GT-MHR) program be terminated.

In FY 1995, Argonne National Laboratory (ANL) resources are being redirected to higher priority missions including reactor safety, decontamination and decommissioning, and technology development for treatment of DOE spent fuels. These activities are funded under the new Nuclear Technology Research and Development decision unit.

At ANL-W, permanent shutdown of the Experimental Breeder Reactor II (EBR-II) and the Transient Reactor Test Facility (TREAT) was initiated on October 1, 1994. The other major facilities at ANL-W, including the Fuel Cycle Facility (FCF), the Analytical Laboratory (AL), and the Hot Fuel Examination Facility (HFEF), will be operated as necessary to support the shutdown of EBR-II and the redirected program. The FCF and AL will support shutdown of the EBR-II by treating the blanket assemblies and irradiated fuel for placement into a storable form.

The shutdown of Nuclear Energy (NE) programs at the nonnuclear component test complex at the Energy Technology Engineering Center (ETEC), near Canoga Park, California, was completed in FY 1994. Selected ETEC facilities are being operated in support of other DOE programs in FY 1995 and FY 1996. Funding for the operation of these facilities is provided by program sponsors.

In FY 1996, plans call for responsibility for the shutdown of the Tower Shielding Facility (TSF) and the Consolidated Fuel Reprocessing Facility (CFRF) at the Oak Ridge National Laboratory (ORNL), and the Advanced Reactivity Measurements Facility/Coupled Fast Reactivity Measurement Facility (ARMF/CFRMF) at the Idaho National Engineering Laboratory (INEL), to be transferred to EM.

In September 1994, the Department and the Idaho Brain Tumor Center (IBTC) signed a lease agreement that paves the way for the IBTC to prepare the Power Burst Facility at the INEL to perform brain cancer therapy. The IBTC will assume responsibility for the surveillance and maintenance of the facility when necessary NRC permits and other lease conditions have been met.

Output Measures:

- Planned FY 1996 EBR-II shutdown activities include removal of an additional 250 of the original 475 subassemblies from the reactor

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

TERMINATION COSTS

Activity	FY 1994 Appropriation	FY 1995 Appropriation	FY 1996 Request
Termination Costs			
Operating Expenses	$ 97,942	$ 63,000	$ 76,000
Capital Equipment	4,861	1,000	3,000
Construction	1,944	5,705	2,700
TOTAL	$ 104,747	$ 69,705	$ 81,700
Summary			
Operating Expenses	$ 97,942	$ 63,000	$ 76,000
Capital Equipment	4,861	1,000	3,000
Construction	1,944	5,705	2,700
TOTAL PROGRAM	$ 104,747	$ 69,705	$ 81,700

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Termination Costs

FY 1995 Appropriation	$	69,705
Termination Costs		
- Initiate MHTGR program closeout activities	+	7,250
- Conduct EBR-II shutdown activities	-	771
- Transfer FCF & AL requirements from Facilities decision unit	+	7,300
- Transfer TSF and CFRF to EM	-	1,112
- Transfer PBF to EM	-	1,100
- Transfer ARMF/CFRMF to EM	-	70
- Conduct studies, evaluations and management support activities	+	498
FY 1996 Congressional Budget Request	$	81,700

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TERMINATION COSTS

I. Preface: Termination Costs

Consistent with FY 1995 Congressional appropriations legislation, the Advanced Liquid Metal Reactor (ALMR) and the Integral Fast Reactor(IFR)/Actinide Recycle programs are being terminated in FY 1995. The FY 1996 budget proposes that the Gas Turbine-Modular Helium Reactor (GT-MHR) program be terminated.

In FY 1995, Argonne National Laboratory (ANL) resources are being redirected to higher priority missions including reactor safety, decontamination and decommissioning, and technology development for treatment of DOE spent fuels. These activities are funded under the new Nuclear Technology Research and Development decision unit in FY 1996.

At ANL-W, permanent shutdown of the Experimental Breeder Reactor II (EBR-II) and the Transient Reactor Test Facility (TREAT) was initiated on October 1, 1994. The other major facilities at ANL-W, including the Fuel Cycle Facility (FCF), the Analytical Laboratory (AL), and the Hot Fuel Examination Facility (HFEF), will be operated as necessary to support the shutdown of EBR-II and the redirected program. The FCF and AL will support shutdown of the EBR-II by treating the blanket assemblies and irradiated fuel for placement into a storable form.

The EBR-II, TREAT, and other surplus facilities at ANL-W will be placed into a radiologically and industrially safe condition for transfer to the Assistant Secretary for Environmental Management (EM) in October 1998. Shutdown activities include preparation of environmental documents, defueling EBR-II and TREAT, treatment of EBR-II blanket assemblies and irradiated fuel in the FCF, removal of sodium from EBR-II, processing of the sodium, and placement of all surplus shutdown ANL-W facilities into a safe condition requiring minimum surveillance and maintenance. Activities to support EBR-II shutdown commenced in FY 1994 and included initiating removal of the blanket assemblies for treatment in the FCF for placement into a storable form.

The shutdown of Nuclear Energy (NE) programs at the nonnuclear component test complex at the Energy Technology Engineering Center (ETEC), near Canoga Park, California, was completed in FY 1994. Selected ETEC facilities are being operated in support of other DOE programs in FY 1995 and FY 1996. Funding for the operation of these facilities is provided by the program sponsors.

In FY 1996, plans call for responsibility for the shutdown of the Tower Shielding Facility (TSF) and the Consolidated Fuel Reprocessing Facility (CFRF) at the Oak Ridge National Laboratory (ORNL), and the Advanced Reactivity Measurements Facility/Coupled Fast Reactivity Measurement Facility (ARMF/CFRMF) at the Idaho National Engineering Laboratory (INEL) to be transferred to EM.

In September 1994, the Department and the Idaho Brain Tumor Center (IBTC) signed a lease agreement that paves the way for the IBTC to prepare the Power Burst Facility (PBF) at the INEL to perform brain cancer therapy. The IBTC will assume responsibility for the surveillance and maintenance of the facility when necessary Nuclear Regulatory Commission permits and other lease conditions have been met. If the lease conditions necessary for the Center to assume responsibility for the facility have not been met by FY 1996, surveillance and maintenance will be provided by EM.

II. A. Summary Table: Termination Costs

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Gas Turbine-Modular Helium Reactor	$ 4,037	$ 0	$ 7,250	$ 7,250
Advanced Liquid Metal Reactor Design	5,737	0	0	0
Argonne National Laboratory West (ANL-West)	69,988	66,471	73,000	6,529
Energy Technology Engineering Center (ETEC)	20,900	0	0	0
Tower Shielding Facility	485	500	0	-500
Consolidated Fuel Reprocessing Facility	989	612	0	-612
Power Surst Facility	436	1,100	0	-1,100
Advanced Reactivity Measurements Facility/Coupled Fast Reactivity Measurements Facility (ARMF/CFRMF)	70	70	0	-70
Other	2,105	952	1,450	498
Total, Termination Costs	$ 104,747	$ 69,705	$ 81,700	$ 11,995

II. B. Laboratory and Facility Funding Table: Termination Costs

Argonne National Lab (West)	$ 69,988	$ 66,471	$ 73,000	$ 6,529
Brookhaven National Lab	50	0	100	100
Energy Technology Engineering Center	20,900	0	0	0
Idaho National Engineering Lab	506	1,170	0	-1,170
Oak Ridge National Lab	2,673	1,112	1,650	538
Oakland Operations Office	8,674	0	5,250	5,250
All Other	1,956	952	1,700	748
Total, Termination Costs	$ 104,747	$ 69,705	$ 81,700	$ 11,995

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Termination Costs			
Gas Turbine-Modular Helium Reactor	Continued the research and development design effort on the Gas Turbine-Modular Helium Reactor (GT-MHR) program as directed by Congress.	Program funded under the Advanced Reactor R&D decision unit.	Terminate program consistent with NAS report. Funding provides for: Project Rate Rebilling, disposal of irradiated fuel and hot cell clean up at ORNL, personnel severance payments at ORNL, and shipment of special nuclear material from General Atomics.
	$ 4,037	$ 0	$ 7,250
Advanced Liquid Metal Reactor Design	Funded the ALMR design contract in FY 1994.	Complete the design contract.	No Activity.
	$ 5,737	$ 0	$ 0
Argonne National Laboratory West (ANL-West)	Initiated EBR-II shutdown activities in FY 1994 in parallel with its continued operation. Shutdown activities included initiation of removal of blanket assemblies for treatment in the FCF.	Ceased EBR-II operation as of October 1, 1994. Shutdown activities continue, including preparation of an environmental assessment, removal of EBR-II blanket assemblies and irradiated fuel, and treatment of blanket assemblies and fuel in FCF for placement into storable form.	Continue EBR-II shutdown activities including defueling, and treatment of blanket assemblies and irradiated fuel in FCF for placement into a storable form.
	At FCF, continued facility modifications to support treatment of EBR-II blanket assemblies and irradiated fuel for placement into a storable form. Continued to develop processes to support handling and storage of waste from FCF operations. Additional funding provided under the Facilities decision unit.	At FCF, initiate treatment of EBR-II blanket assemblies and irradiated fuel into a storable form. Additional funding provided under the Facilities decision unit.	At FCF, continue treatment of EBR-II blanket assemblies and irradiated fuel for placement into a storable form.
	Continued AL modifications to provide the capability to perform chemical analyses on radioactive process materials to support FCF operations. Additional funding provided under the Facilities decision unit.	Initiate chemical analyses on radioactive process materials in AL to support FCF operations for treatment of EBR-II blanket assemblies and irradiated fuel. Additional funding provided under the Facilities decision unit.	Continue performing chemical analyses on radioactive process materials in AL to support FCF operations for treatment of EBR-II blanket assemblies and irradiated fuel.

III. Termination Costs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Argonne National Laboratory West (ANL-West) (Cont'd)	Fabricated EBR-II control rods and driver fuel at the Fuel Manufacturing Facility (FMF). Removed fissile material from the FMF glove boxes and stored material in the FMF vault. Fabricated dummy subassemblies to replace blanket subassemblies removed from EBR-II.	Continue cleaning of FMF glove boxes. Continue fabrication of dummy assemblies to replace blanket and fuel assemblies removed from EBR-II.	Continue fabrication of dummy assemblies to replace blanket and fuel assemblies removed from EBR-II.
	Utilized HFEF to handle and examine irradiated materials and support movement of EBR-II blanket assemblies.	Utilize HFEF to support the movement of EBR-II blanket assemblies and irradiated fuel to FCF.	Utilize HFEF to support the movement of EBR-II blanket assemblies and irradiated fuel to FCF.
	Initiated Zero Power Physics Reactor (ZPPR) shutdown and placed facility in a safe shutdown condition.	Conduct minimum surveillance and maintenance of ZPPR.	Conduct minimum surveillance and maintenance of ZPPR.
	Maintained TREAT in operational standby status.	Initiate TREAT shutdown activities including defueling, placement of fuel in a secure condition within TREAT buildings, and placing TREAT in a safe shutdown condition.	Continue TREAT shutdown activities including defueling, placement of fuel in a secure condition within TREAT buildings, and placing TREAT in a safe shutdown condition.
	Procured and installed equipment and provided General Plant Project (GPP) and Modifications to Reactors funding to support site activities and perform required maintenance and upgrades on the EBR-II systems.	Procure and install equipment to support the shutdown. Provide GPP and Modifications to Reactors funding to support site activities, to commence modification of the Sodium Processing Facility, and to perform required maintenance and upgrades on the EBR-II fuel handling systems required for shutdown activities.	Procure and install equipment to support the shutdown. Provide GPP and Modifications to Reactors funding to support site activities and to complete modification of the Sodium Processing Facility.
	Provided physical security of facilities and accountability of special nuclear materials.	Provided physical security of facilities and accountability of special nuclear materials.	Provided physical security of facilities and accountability of special nuclear materials.
	$ 69,988	$ 66,471	$ 73,000

III. Termination Costs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy Technology Engineering Center (ETEC)	Completed on-schedule test article shipment and documentation of the steam generator testing program under the contract with Japan Atomic Power Company. Initiated and completed shutdown of NE operations at ETEC. Shutdown activities included draining of sodium from the unused surplus sodium facilities and placement in storage tanks. Terminated the lease agreement for the Sodium Components Test Installation Power Pak cogeneration equipment. Reviewed potential for the utilization and funding of ETEC facilities by the private sector, international, and other organizations.	Operate selected facilities in support of other programs. Funding for facility operations provided by program sponsors.	Operate selected facilities in support of other programs. Funding for facility operations provided by program sponsors.
	$ 20,900	$ 0	$ 0
Tower Shielding Facility	Continue surveillance and maintenance of TSF.	Continue surveillance and maintenance of TSF.	Transfer responsibility for TSF to EM to continue surveillance and maintenance and cleanup activities.
	$ 485	$ 500	$ 0
Consolidated Fuel Reprocessing Facility	Complete joint PNC-DOE cooperative program in the Consolidated Fuel Reprocessing Facility (CFRF) using PNC funds; conduct facility operations and required surveillance and maintenance.	Continue surveillance and maintenance in CFRF and initiate cleanup activities.	Transfer responsibility for CFRF to EM to continue surveillance and maintenance and cleanup activities.
	$ 989	$ 612	$ 0
Power Burst Facility	Continued surveillance and maintenance for PBF; majority of funding provided by Energy Research. Executed contract for lease of PBF to the IBTC.	Continue surveillance and maintenance for PBF and support the transfer of responsibility to the IBTC. Equal funding provided by this account and Energy Research.	If the lease conditions necessary for the IBTC to assume surveillance and maintenance responsibility have not been met, funding for the surveillance and maintenance of PBF will be provided by EM.
	$ 436	$ 1,100	$ 0

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III. Termination Costs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Reactivity Measurements Facility/Coupled Fast Reactivity Measurements Facility (ARMF/CFRMF)	Conducted surveillance and maintenance of the ARMF/CFRMF.	Conduct surveillance and mantenance of the ARMF/CFRMF.	Transfer responsibility to EM to continue surveillance and maintenance and cleanup activities.
	$ 70	$ 70	$ 0
Other	Conducted studies, evaluations and management support activities.	Conduct studies, evaluations and management support activities.	Conduct studies, evaluations and management support activities.
	$ 2,105	$ 952	$ 1,450
Termination Costs	$ 104,747	$ 69,705	$ 81,700

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

SOVIET-DESIGNED REACTOR SAFETY

The U.S. has been providing technical and financial cooperation to improve the safety of Soviet-designed nuclear reactors with funding provided by the U.S. Agency for International Development (USAID). The objective of the program is reducing the risk from operation of the older, least safe plants by infusing western standards and hardware on existing operations and plants. In order to further reduce risks, it is necessary to place more emphasis on the development of cooperative programs that create the safety culture and infrastructure required to enable host countries to provide for their own needs.

Following the Chernobyl accident in 1986, the U.S. and others analyzed the Soviet nuclear power program, the accident, and the type of reactor involved, the RBMK. The U.S. subsequently analyzed the other main type of Soviet-designed reactor, the VVER, with two reports being issued in 1987 and 1989. These analyses found deficiencies in all of the VVER reactor designs, but most significantly in the first generation design of the VVER-440/230. These analyses also highlighted as generally poor safety cultures resulting in operational safety problems throughout the Soviet system. Further studies of the VVER 440/230 facilities in Bulgaria, Solvaki, and Russia were performed by the International Atomic Energy Agency in 1990 and 1991. These studies confirmed the earlier U.S. findings. A primary area of concern is safety culture. This includes management, training, and quality. Specific concerns include: lack of general attitude that safety is a primary objective and the responsibility of all personnel; lack of management systems that foster a positive safety culture; lack of reliance on or confidence in management controls to assure proper maintenance, adequate safety analysis, etc.; lack of effective training and procedures; insufficient access of plant operations and technical support staffs to the basic design documentation and technical specifications of the plants they operate; no overall backfit policy; and priority on production over safety.

The two Soviet reactor designs causing the most concern are the RBMK and VVER-440/230 models. The RBMK reactor design was developed as a military plutonium production reactor that could also produce electricity. This development was done with little appreciation for nuclear safety as practiced in the West. While there have been improvements in each subsequent generation, the overall design is seriously flawed. The major design deficiencies of the RBMKs are: fundamentally unstable reactor design and poorly designed systems for shutdown of the reactor; lack of separation and redundancy in critical electrical and fluid systems and general susceptibility of systems important to safety to common cause failures; little or no fire protection; no containment system; and a confinement system which does not enclose the entire primary coolant system and with limited pressure retention capability.

The VVER 440/230 is the first production model of the VVER concept and was also designed in a manner substandard to western nuclear safety requirements. While there are some inherent positive features of the design (such as large water inventory and low power density of the fuel), there are major design deficiencies in the VVER 440/230s that include: lack of separation and redundancy in critical electrical and safety systems; general susceptibility of systems important to safety to common-cause failures; inadequate fire protection; insufficient safety systems to cope with primary system leaks; and a lack of a western-style containment system.

International concern over the operation of Soviet-designed reactors remains substantial. These plants have significant weaknesses in the area of operational safety and design. The design of RBMKs and VVER 440/230s are not consistent with Western safety standards. They cannot practically be upgraded to meet contemporary standards for safety and should not be operated any longer than necessary. The likelihood of a serious accident from these plants is considered high.

To address these concerns and improve the safety of Soviet-designed reactors, the U.S. Government in concert with the other G-7 countries developed a five point nuclear safety improvement plan. This plan included operational safety and training needs over the short to medium term to improve safety culture deficiencies; interim key risk reduction measures to reduce the hazards from operation of the older highest risk reactors (RBMKs and VVER-440/230s) in the short-term; assistance in regulatory reform in the short to medium term; short-term evaluation of energy alternatives to permit early shutdown of the RBMKs and VVER-440/230s with implementation in the medium to long term; and in the medium and

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long term, upgrade of the better plants (VVER-1000s and VVER-440/213s), as necessary, based on safety analyses including assessment of upgrades needed for VVER-1000s under construction.

The Department of Energy was initially provided $21.9 million of funding in FY 1992 foreign assistance appropriations through the USAID; another $25 million was funded from USAID and the Department of Defense (DOD) appropriations in FY 1993; and $75 million from FY 1994 USAID appropriations (to be received for use in FY 1995).

The Department of Energy's FY 1996 OMB budget request for Soviet-designed Reactor Safety is $78.764 million. This continues the U.S. mission to reduce the risks of Soviet-designed nuclear powerplants working cooperatively with the Newly Independent States to strengthen their nuclear safety culture and supporting infrastructure. The major program elements to be covered by this funding are Plant Safety Evaluations; Management and Operational Safety; Engineering and Technology Safety; Fuel Cycle Safety Evaluations; and Safety Regulation and Legislation. The Plant Safety Evaluations element will include activities to ensure that modern verified and validated codes are available for use in plant safety evaluations and that plant design basis documentation is available. The Management and Operational Safety element includes Operator Training, Conduct of Operations, Operating Procedures, Emergency Response, Configuration Management, and mechanisms for developing support organizations in these countries. The Engineering and Technology element included developing the capability for nuclear plant sites to specify and procure quality safety-related equipment and for industry to have the capability to design and manufacture the equipment to these specifications. The focus of the work is toward technology transfer through joint ventures with U.S. companies that will result in the development of the capabilities that will enable Russia and the Ukraine to provide necessary equipment or supplies. The Fuel Cycle Support element will include the assessment of the status of spent fuel storage in the Ukraine and Russia and the identification of any existing or expected needs with an emphasis that supports shutdown of the Chernobyl reactors. The Safety Regulation and Legislation element will provide assistance to Russia and the Ukraine in developing safety legislation and regulations comparable to the Atomic Energy Act and other applicable U.S. safety regulations.

Performance Measures:

Overall program measures of success include the following:

- o Development of and agreement on program goals, objectives, and strategic plans between the United States and the host countries;
- o Involvement of plant operators, plant technical support, and regulators in program planning and execution;
- o Agreement among interested parties in the United States and host countries on safety problems and priorities;
- o Evidence of the host country making independent decisions regarding safety upgrades, operation, and shutdown in light of safety concerns;
- o Measurable improvements in plant operational performance, and
- o Measurable improvement in operator performance.

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(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Soviet-Designed Reactor Safety

FY 1995 Appropriation	$ 0
- Adjustment -	0
FY 1995 Adjusted	$ 0
- Transfer -	0
FY 1995 Comparable	$ 0

Soviet-Designed Reactor Safety

- Soviet-Designed Reactor Safety - Initiate Soviet-Designed Reactor Safety Activities	+78,764
FY 1996 CONGRESSIONAL Budget Request	$ 78,764

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LEAD TABLE

Soviet-Designed Reactor Safety

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Soviet-Designed Reactor Safety					
Operating Expenses	$ 30,000	$ 0	$ 0	$ 0	$ 78,764
Adjustment	0	0	0	0	0
TOTAL	$ 30,000	$ 0	$ 0	$ 0	$ 78,764
Summary					
Operating Expenses	$ 30,000	$ 0	$ 0	$ 0	$ 78,764
Total Program	$ 30,000	$ 0	$ 0	$ 0	$ 78,764
Staffing (FTEs)	0	0	0	0	0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOVIET-DESIGNED REACTOR SAFETY

I. Preface: Soviet-Designed Reactor Safety

At the Vancouver and Tokyo Summits, President Clinton reiterated the U.S. commitment to improve the safety of Soviet-designed nuclear power plants. In 1992 United States Agency for International Development (USAID) began providing funds to the DOE in support of the Nuclear Safety Initiative. The three primary project components were: Training Centers - establishing two regional training centers, one in Russia and one in the Ukraine, to serve as the focal point for training plant operators and engineers; Operational Safety - developing and improving nuclear power plant emergency operating instructions; and Near-Term Risk Reduction - developing basic fire protection capability and installation of safety upgrade equipment to avoid or confine severe accidents at the older, least safe (RBMK and VVER 440/230) nuclear reactors. Exclusive funding from USAID is continuing through FY 1995.

The Nuclear Safety Initiative was conceived as a shorter term effort to address the most serious safety problems of Soviet-designed reactors by infusing western safety concepts and hardware on the existing operations and reactor plants. Further gains in reducing the risks of Soviet-designed nuclear power plants require working cooperatively with the Newly Independent States to strengthen their nuclear safety culture and supporting infrastructure. The FY 1996 budget addresses this longer term initiative to reduce the risk of Soviet-designed reactors by focusing on nuclear safety culture and supporting infrastructure in the areas of: Plant Safety Evaluations; Management and Operational Safety; Engineering and Technology Safety; Fuel Cycle Safety; and Safety Regulation and Legislation with emphasis that supports shutdown of the Chernobyl reactors. In order to continue the previous effort and bring it toward completion and to execute the activities to strengthen nuclear safety culture and supporting infrastructure, both AID and DOE funding will be utilized in FY 1996. The following Key Activity Summary describes the total program effort.

II. A. Summary Table: Soviet-Designed Reactor Safety

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Soviet-Designed Reactor Safety	$ 30,000	$ 0	$ 78,764	$ 78,764
Total, Soviet-Designed Reactor Safety	$ 30,000	$ 0	$ 78,764	$ 78,764

II. B. Laboratory and Facility Funding Table: Soviet-Designed Reactor Safety

Pacific Northwest Lab	0	0	78,764	78,764
All Other	30,000	0	0	0
Total, Soviet-Designed Reactor Safety	$ 30,000	$ 0	$ 78,764	$ 78,764

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Soviet-Designed Reactor Safety	Funding received from the U.S. Agency for International Development on September 30, 1994, for execution in FY 1995 at the Pacific Northwest Laboratory, Chicago, and Washington, D.C.	The following activities will be performed in FY 1995 with funds provided by the U.S. Agency for International Development: Continue the implementation of Emergency Operating Instructions and Procedures at pilot plants for each of the four Soviet-design types ($6,000). Continue the development of training courses and supply training equipment for power plant operations positions ($7,800). Provide simulators for operator training ($9,500). Begin the development of management and operational safety standards including operator exchange visits ($1,300). Improvement of emergency response capabilities ($1,000). Implement fire safety upgrades at pilot plant and provide overall fire hazards evaluation training; initiate upgrades ($5,500). Implement confinement system upgrades to limit consequences of a severe accident ($8,500). Implement safety system upgrades to reduce the risk of a severe accident ($15,600). Begin technology transfer of critical safety improvement capabilities ($1,500). Provide modern accident analyses codes and training, validated for Soviet reactor geometry and assist in performing safety assessment of operating plants, and providing modern safety assessment equipment and software ($9,500). Provide fuel cycle safety assistance to Ukraine's Zaporozhye power plant by assisting Ukraine with developing a dry cask storage manufacturing capability and providing related nuclear fuel drying and transfer equipment ($7,800).	Continue the process of assistance, coordinated with that of the U.S. Nuclear Regulatory Commission (NRC), in establishment of legislation needed to provide a national legal framework for assignment of responsibilities and authorities to ensure that the use of nuclear power is consistent with acceptable safety and environmental standards and that the regulatory bodies possess adequate tools and training in their use ($2,000). Continue Safety Analysis and Probabilistic Risk Assessments that have dual objectives of deriving baseline design data and developing host nation abilities to develop/perform design basis documentation, safety analysis, and probabilistic risk assessments ($8,000). Continue to upgrade design institute capabilities by providing codes, computers, and training ($5,000). Commence safety analysis of Russian BN-600 and Kazak BN-350 nuclear power plants ($1,000). Start implementation of configuration management at pilot plants with the dual goal of developing baseline configuration status of those plants developing host nation capability for the future with minimal U.S. assistance ($2,000). Continue development of operational self-assessment and other infrastructure capabilities ($2,000). Complete design of pilot training programs and begin expansion of curriculum to other reactor plant sites ($4,000). Begin to adapt developed emergency operating instructions to remaining plants ($2,000). Support joint ventures with U.S. companies for operator training simulators at

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III. Soviet-Designed Reactor Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Soviet-Designed Reactor Safety (Cont'd)		Begin providing assistance, coordinated with the U.S. Nuclear Regulatory Commission (NRC), in establishment of the legislation needed to provide a national legal framework for assignment responsibilities and authorities to ensure that the use of nuclear power is consistent with acceptable safety and environmental standards and that the regulatory bodies possess adequate tools and training in their use ($650). Support special studies of energy alternatives in Russia and Ukraine directed at the possible closure of the highest risk reactors ($350). Total NE program effort in FY 1995 is $75 Million.	additional plant sites ($9,000). Continue support for efforts to shut down the Chernobyl nuclear power plant through development of an energy program that allows closure with minimal social disruption ($9,000). Continue support in the development and implementation of emergency response capabilities ($4,000). Continue assistance in the development of robust local infrastructure through joint ventures with U.S. companies in completing upgrades to fire protection systems ($5,000), and VVER and RBMK safety systems ($7,000). Assist in implementation of spent fuel storage and disposition strategies ($2,000). Provide assistance in addressing technical issues related to shutdown of the Chernobyl plant such as safety, spent fuel storage, and decommissioning ($8,000). Commence safety cooperation programs with other countries with Soviet-designed nuclear power plants ($8,764).
	$ 30,000	$ 0	$ 78,764
Soviet-Designed Reactor Safety	$ 30,000	$ 0 A/	$ 78,764

A/ $45 Million to be provided by the U.S. Agency for International Development in FY 1995. The total FY 1995 program is expected to be $75 Million (including $30 Million received in FY 1994).

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

RUSSIAN REPLACEMENT POWER INITIATIVES

To ensure Russian compliance with the June 23, 1994, Gore-Chernomyrdin agreement to shut down all plutonium production reactors for weapons materials by the year 2000, the Department of Energy (DOE) has the responsibility to assist the cities of Tomsk and Krasnoyarsk-26 in obtaining financing and ensuring the timely construction of replacement power (nuclear or non-nuclear alternatives). The three production reactors in Tomsk-7 and Krasnoyarsk-26 provide heat and electricity to the civilian population in the area. Activities of the DOE include personnel and contractors to interface with other U.S. government agencies and the governments of Russia (federal and local) to ensure timely implementation of replacement power and total shutdown of the production reactors by the year 1999. Activities will include implementing safety modifications and evaluating and implementing a plan for advanced energy efficiency. Fossil Energy will continue to replace coal plants; however, in the case of plutonium production reactors, the Office of Nuclear Energy will address both nuclear and non-nuclear options.

The goals and objectives of this initiative are to ensure accident-free operation through 1999, total power replacement installed and operating by 1998, total shutdown of the three plutonium production reactors by 1999 and to implement energy efficiency options into the social-economic culture of the Tomsk and Krasnoyarsk-26 cities.

Performance Measures:
-Completion of replacement power "Feasibility Studies" for Tomsk and Krasnoyarsk-26.
-Development of an implementation plan for replacement power to ensure shut down of the Plutonium Production reactors at Tomsk-7 and Krasnoyarsk-26 by the year 2000.
-Identification of Financial Institutions who would support financing replacement power and begin the process of financial consideration.
-Establishment of a plan to implement advanced energy efficiency in the cities of Tomsk and Krasnoyarsk-26.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Russian Replacement Power Initiatives

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Russian Replacement Power Initiatives					
Operating Expenses	$ 0	$ 0	$ 0	$ 0	$ 5,000
Adjustment					
TOTAL	$ 0	$ 0	$ 0	$ 0	$ 5,000
Summary					
Operating Expenses	$ 0	$ 0	$ 0	$ 0	$ 5,000
Total Program	$ 0	$ 0	$ 0	$ 0	$ 5,000
Staffing (FTEs)	0	0	0	0	0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Russian Replacement Power Initiatives

FY 1995 Appropriation	$ 0
- Adjustment -	0
FY 1995 Adjusted	$ 0
- Transfer -	0
FY 1995 Comparable	$ 0

Russian Replacement Power Initiatives

- Russian Replacement Power Initiatives - Supports implementation of replacement power phased project	+5,000
FY 1996 CONGRESSIONAL Budget Request	$ 5,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

RUSSIAN REPLACEMENT POWER INITIATIVES

I. Preface: Russian Replacement Power Initiatives

To ensure Russian compliance with the June 23, 1994, Vice President Gore and Prime Minister Chernomyrdin agreement to shut down all plutonium production reactors for weapons material by the Year 2000, the Department of Energy has a responsibility to assist the cities of Tomsk and Krasnoyarsk-26 in obtaining financing for replacement power systems, monitoring feasibility studies and construction, implementing safety modifications and evaluating and implementing a plan for advanced energy efficiency. The three production reactors in Tomsk and K-26 provide heat and electricity to the civilian population in the area. Implementation will require Department personnel and contractor interface to ensure phased implementation and total shutdown by 1999.

II. A. Summary Table: Russian Replacement Power Initiatives

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Russian Replacement Power Initiatives.....	$ 0	$ 0	$ 5,000	$ 5,000
Total, Russian Replacement Power Initiatives	$ 0	$ 0	$ 5,000	$ 5,000

II. B. Laboratory and Facility Funding Table: Russian Replacement Power Initiatives

Washington Headquarters	$ 0	$ 0	$ 5,000	$ 5,000
Total, Russian Replacement Power Initiatives	$ 0	$ 0	$ 5,000	$ 5,000

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Russian Replacement Power Initiatives	Activities funded by Fossil Energy.	Pursue funding for feasibility studies of Krasnoyarsk-26. Assist in obtaining funding for Tomsk and Krasnoyarsk-26. Perform energy efficiency studies in those cities and examine and study core replacement for Russian plutonium reactors.	Continuation of replacement power phased project.
	$ 0	$ 0	$ 5,000
Russian Replacement Power Initiatives	$ 0	$ 0	$ 5,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ISOTOPE SUPPORT

The Isotope Support decision unit will fund a payment into the Isotope Production and Distribution (IP&D) account to assure adequate supplies of isotopes necessary for the national interest, and for supporting our health care system. Specifically, of the $25.4 million being requested, $12.0 million is for the continuation of the Molybdenum-99 (Mo-99) initiative and related medical isotopes and $13.4 million is to maintain financial continuity of radioactive and stable isotope production, processing, distribution, and associated services to commercial and research customers. This funding will be used to support radioisotopes and enriched stable isotopes for research or development, medical diagnosis and therapy, other applications in the national interest, calutron operations to replenish inventories, and administrative activities. An independent study of producing Mo-99 at a government facility in comparison with production at a private facility or by a joint venture was completed. Pending the outcome of the current Environmental Assessment (EA) of the Annular Core Research Reactor located at Sandia National Laboratory in New Mexico this reactor may be the appropriate choice for Mo-99 production.

Output Measures:

- To provide a payment to the revolving fund to assure adequate supplies of isotopes

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH and DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Isotope Support

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1996 Request
Isotope Support			
Operating Expenses			
Mo-99	$ 0	$ 7,600	$ 9,000
Process Development	0	11,893	13,358
Total Operating Expenses	$ 0	$ 19,493	$ 22,358
Capital Equipment			
Mo-99	$ 0	$ 0	$ 3,000
TOTAL	$ 0	$ 19,493	$ 25,358
Summary			
Operating Expenses	$ 0	$ 19,493	$ 22,358
Capital Expenses	$ 0	$ 0	$ 3,000
Total Program	$ 0	$ 19,493	$ 25,358
Staffing (FTE's)	0	12	12

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH and DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Isotope Support

FY 1995 Request	$ 0
- Amendment	$19,493
FY 1996 Comparable	$19,493
Isotope Support	
- Supports continuation of Mo-99 process development and production	+4,400
- Assures an adequate supply of isotopes to be used for research and development, medical diagnosis and other therapy	$+1,465
TOTAL	$ 5,865
FY 1996 Congressional Budget Request	$ 25,358

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ISOTOPE SUPPORT

I. Preface: Isotope Support

The Isotope Support decision unit will fund a payment into the Isotope Production and Distribution (IP&D) account to assure adequate supplies of isotopes necessary for the national interest, and for supporting our health care system. Specifically, of the $25.4 million being requested, $12.0 million is for the continuation of the Molybdenum-99 (Mo-99) initiative and related medical isotopes and $13.4 million is to maintain financial continuity of isotope production, processing, distribution to customers, support production and sales of a variety of medical and research radioactive and stable isotope products and associated services including operation of the calutrons to replenish inventories.

II. A. Summary Table: Isotope Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Mo-99 Process Development & Production	$ 0	$ 7,600	$ 12,000	$ 4,400
Isotope Production & Distribution	0	10,193	11,658	1,465
Program Direction	0	1,700	1,700	0
Total, Isotope Support	$ 0	$ 19,493	$ 25,358	$ 5,865

II. B. Laboratory and Facility Funding Table: Isotope Support

Brookhaven National Lab	$ 0	$ 250	$ 150	$ -100
Idaho National Engineering Lab	0	450	400	-50
Los Alamos National Laboratory	0	1,200	1,200	0
Mound Plant	0	1,300	1,300	0
Oak Ridge National Lab	0	3,500	2,550	-950
Sandia National Laboratories	0	7,600	12,000	4,400
All Other	0	5,193	7,758	2,565
Total, Isotope Support	$ 0	$ 19,493	$ 25,358	$ 5,865

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Isotope Support			
Mo-99 Process Development & Production	Funded under the IP&D Revolving Fund.	Provides for continuation of Mo-99 initiative for facility modification and equipment acquisition as required to market, produce, process and supply Mo-99 and related medical isotopes. ($7,600)	Provides for continuation of Mo-99 initiative for facility modification and equipment acquisition and production as required to market, produce, process and supply Mo-99 and related medical isotopes. If given a positive result of an environmental assessment currently being conducted, first Mo-99 production should occur by late spring of 1996. ($9,000)
	No Activity.($0)	No Activity.($0)	Procure capital equipment necessary to support Mo-99 development and production. ($3,000)
	$ 0	$ 7,600	$ 12,000
Isotope Production & Distribution	Funded under the IP&D Revolving Fund.	Maintains financial viability of the IP&D program. Assures an adequate supply of isotopes to be used for medical diagnoses and therapy, other applications in the national interest, calutron operations to replenish inventories, and administrative activities. This assumes a projected revenue offset of $9.5 million in FY 1995. ($10,193)	Maintains financial viability of the IP&D program. Assures an adequate supply of isotopes to be used for medical diagnoses and therapy, other applications in the national interest, calutron operations to replenish inventories, and administrative activities. This assumes a projected revenue offset of $9.5 million in FY 1996. ($11,658)
	$ 0	$ 10,193	$ 11,658
Program Direction	Funded under the IP&D Revolving Fund.	Support to salaries, benefits, travel and miscellaneous supplies or services (including contractor support services) for 11 FTEs at headquarters and 1 field office FTE. ($1,700)	Support to salaries, benefits, travel and miscellaneous supplies or services (including contractor support services) for 11 FTEs at headquarters and 1 field office FTE. ($1,700)
	$ 0	$ 1,700	$ 1,700
Isotope Support	$ 0	$ 19,493	$ 25,358

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IV. A. Project Summary Listing

Energy Supply Research and Development

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Request	FY 1996 Adjusted	Unappropriated Balance	TEC
GNP-102	General Plant Projects, Argonne National Laboratory-West INEL, Idaho	$ 0	$ 1,944	$ 2,194	$ 1,000	$ 0	$ 0
GNP-102	General Plant Projects, Idaho National Engineering Laboratory, Idaho Test Reactor Area	0	0	750	730	0	0
GNP-103	General Plant Projects, Oak Ridge, Tennesee	$ 0	$ 1,450	$ 2,255	$ 3,255	$ 0	$ 0
Subtotal GPP		$ 0	$ 3,394	$ 5,199	$ 4,985	0	0
95-E-201	TRA Fire and Life Safety Improvement, Idaho National Engineering Laboratory, Idaho	0	0	1,722	1,900	11,850	15,472
95-E-207	Modifications to Reactor Argonne National Laboratory, INEL, Idaho EBR-II Sodium Processing Facility	0	0	1,500	1,700	0	3,200
TOTAL Energy Supply R&D		$ 0	$ 3,394	$ 8,421	$ 8,585	$11,850	$18,672
TOTAL NUMBER OF LINE ITEMS		(0)	(2)	(5)	(5)	(1)	

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location:

Project GPN-102 General Plant Projects
Argonne National Laboratory-West
INEL, Idaho

Start Date: 1st Qtr. FY 1996

Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 1,944		$ 1,944	$ 1,849
1995	2,194		2,194	2,075
1996	1,000		1,000	1,025
1997	0		0	495

3. Narrative:

These small construction projects provide for alterations, additions, modifications, rehabilitations and replacements required at the Argonne National Laboratory-West (ANL-W) site to maintain the facilities and site infrastructure in a condition suitable for conduct of site activities. In essence, projects will provide for efficiency of operations, maintenance of acceptable plant conditions, emergency modifications, and improvements in health, safety, environmental, and security conditions.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPN-102 General Plant Projects
Test Reactor Area
INEL, Idaho

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 0[1]		$ 0	$ 0
1995	750		750	300
1996	730		730	900
1997	0		0	280

3. Narrative:

These small construction projects provide for alterations, additions, modifications, rehabilitations and replacements required at the Test Reactor Area site at the INEL, to maintain the facilities and site infrastructure in a condition suitable for conduct of site activities. In essence, projects will provide for efficiency of operations, maintenance of acceptable plant conditions, emergency modifications, and improvements in health, safety, environmental, and security conditions.

[1] Funding provided under Office of Environmental Management authorization prior to FY 1995.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: GPN-103, General Plant Projects
Oak Ridge, Tennessee

Start Date: N/A Completion Date: N/A

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 2,255		$ 2,255	$ 1,868
1996	3,255		3,255	3,000

The General Plant Projects at Oak Ridge includes funding for upgrades to the water plant and other DOE-owned facilities, the installation of automated controls at the water plant; the co-location of procurement offices; warehousing, the construction of a wash rack for the Heavy Equipment Shop at the water plant; and sprinkler upgrades and soundproofing of facilities. Also includes approximately one-half of the required funding for upgrades and modifications to facilities at MK-Ferguson; the establishment of areas to accommodate the storage and reuse of tools that are within tolerable contamination limits; the consolidation of staff; shop operations; subcontractor staging areas; and improvements to subcontractor staging areas.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-201 TRA Fire and Life Safety Improvements, INEL, Idaho

Start Date: 2nd Qtr. FY 1995 Completion Date: 4th Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 1,722		$ 1,722	$ 1,722
1996	1,900		1,900	1,900
1997	6,800		6,800	4,500
1998	4,000		4,000	5,460
1999	1,050		1,050	1,890

3. Narrative:

The Test Reactor Area (TRA) Fire and Life Safety Improvements project provides for the design, procurement, and construction activities to correct fire protection and life safety code deficiencies at the TRA. Modifications and upgrades to existing fire protection systems, installation of new systems, and upgrades to existing facilities will bring occupied TRA facilities in compliance with national codes and standards and Department of Energy regulations.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-207 Modifications to Reactors
Argonne National Laboratory-West
INEL, Idaho
Sodium Processing Facility

Start Date: 1st Qtr. FY 1995 Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 1,500	$ 1,500	$ 1,500	$ 1,500
1996	1,700	1,700	1,700	1,700

3. Narrative:

This project provides for completing the construction of the existing Sodium Processing Facility which was designed to produce 50 percent sodium hydroxide solution. This project includes design, procurement, and construction of modifications and additions to the existing facility to produce sodium carbonate rather than sodium hydroxide as the end product; sodium carbonate is an acceptable form for sodium waste disposal while sodium hydroxide is not.

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Civilian Waste Research and Development

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

CIVILIAN RADIOACTIVE WASTE RESEARCH AND DEVELOPMENT

Title II of the Nuclear Waste Policy Act (NWPA), mandates a focused and integrated high-level radioactive waste and spent nuclear fuel research and development program. In compliance with this mandate, the Office of Civilian Radioactive Waste Management (OCRWM) seeks to encourage and expedite the development and demonstration of new, cross-cutting technologies which allow an increase in the current on-site (at-reactor) storage capacity of spent nuclear fuel. Additional, temporary on-site storage will extend nuclear electricity production and thus contribute to the continuation of nuclear energy generation. The principal focal points of OCRWM's efforts under Title II of the NWPA are cooperative demonstrations of dry storage technologies, which includes the consolidation and continued monitoring of spent nuclear fuel, and development of data on spent fuel conditions and properties which can be used as a basis to support design, licensing, and operation of interim dry storage facilities.

During Fiscal Year 1996, OCRWM will conduct activities in each of the following areas in support of Title II of the NWPA:

Cooperative Demonstrations: Dry storage systems represent an alternative method of providing additional spent fuel storage at nuclear power plant sites. Potential methods of dry storage include casks, drywells, silos and vaults. OCRWM will continue to support these demonstrations to provide data and information for future Nuclear Regulatory Commission (NRC) licensing. OCRWM is currently participating in a DOE/industry/utility research, development, and demonstration (RD&D) project to develop a dry spent fuel transfer system and a transport/storage system.

Spent Fuel Generic R&D: OCRWM will continue to support generic R&D of alternative spent nuclear fuel storage technologies to enchance at-reactor storage capacity.

International Cooperation: Upon request, under Section 223 of the NWPA, OCRWM will provide technical assistance and information exchanges to non-nuclear weapons states in the fields of at-reactor spent fuel storage; away-from reactor spent fuel storage; monitored retrievable storage; geologic disposal of spent nuclear fuel; and the environmental, safety and health regulations associated with such activities.

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DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Civilian Radioactive Waste Research and Development

Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Civilian Radioactive Waste Research and Development			
Operating Expenses	$ 646	$ 684	$ 699
TOTAL	$ 646	$ 684	$ 699
Summary			
Operating Expenses	$ 646	$ 684	$ 699
Total Program	$ 646	$ 684	$ 699
Staffing (FTE's)	2	2	2

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

SUMMARY OF CHANGES

Civilian Radioactive Waste Research and Development

FY 1995 Appropriation	$684
FY 1995 Comparable	$684
CIVILIAN RADIOACTIVE WASTE RESEARCH AND DEVELOPMENT	
Increase funding for Generic Research and Development Studies, on topics important to long-term storage spent fuel such as modeling the transportable storage cask profiles	+20
Phase out funding for Cooperation with Non-Nuclear Weapons States due to a lack of information requests	-20
Provide increased funding for cask monitoring activities	+15
FY 1996 CONGRESSIONAL BUDGET REQUEST	$699

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CIVILIAN RADIOACTIVE WASTE RESEARCH AND DEVELOPMENT

I Preface: Civilian Radioactive Waste Research and Development

The primary tasks associated with this activity are: cooperative demonstration programs with industry and the electric utilities to develop transportable storage or a dry spent fuel transfer system that the Nuclear Regulatory Commission (NRC) may licence for use at utility or interim storage facilities. Generic research and development (R&D) is used to support studies to describe the behavior of spent fuel in long-term dry storage and establish a data base which will assist in the licensing of dry storage technologies. Technical assistance provided to non-nuclear weapon states is phased out due to a lack of requests. Headquarters staff is responsible for the assessment of technical progress, project planning, milestone progress, guidance, overview and integration of all contractor activities, and initiation of appropriate actions to resolve problems in any of these areas.

The FY 1996 Congressional request of $699K provides for full monitoring and periodic assessments of casks at the Idaho National Engineering Laboratory (INEL) loaded with intact and consolidated fuel, and generic research and development of information and reports on technical subjects important to the design, licensing, operation and maintenance of spent fuel storage facilities. Funding is also provided for two Federal FTEs.

II. A. Summary Table: Civilian Radioactive Waste Research and Development

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change
Spent Fuel Storage Development:				
Cooperative Agreements				
Dry Cask Storage	$180	$281	$296	$15
Subtotal, Cooperative Agreements	$180	$281	$296	$15
Generic Research and Development Studies	339	273	293	20
Cooperation with Non-Nuclear Weapon States	20	20	0	20
Subtotal, Spent Fuel Storage Development	359	293	293	0
Program Direction	107	110	110	0
Total, Civilian Radioactive Waste Research and Development	$646	$684	$699	$15

II. B. Laboratory and Facility Funding Table: Civilian Radioactive Waste Research and Development

Idaho Operations Office	$180	$281	$296	$15
Pacific Northwest Lab	359	293	293	0
Washington Headquarters	107	110	110	0
Total, Civilian Radioactive Waste Research and Development	~~$646~~ 296	$684	* $699	$15

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Civilian Radioactive Waste Research and Development			
Spent Fuel Storage Development			
Cooperative Agreements			
Dry Cask Storage	Continue full monitoring of casks loaded with intact and consolidated spent fuel. Continue participation in the cooperative demonstration project with Sacramento Municipal Utility District (SMUD) and Electric Power Research Institute (EPRI).	Continue full monitoring of casks loaded with intact and consolidated spent fuel. Provide for changeover to a permanent lid on the VSC-17 Cask, i.e., from an elastopolymer seal to eliminate potential for off-gassing of fluorine and reduced seal degradation. Continue participation in the cooperative demonstration project with SMUD and EPRI.	Continue full monitoring of casks loaded with intact and consolidated spent fuel. Conduct cask gas sampling to study the behavior of spent nuclear fuel in long-term storage. Continue participation in the cooperative demonstration project with SMUD and EPRI.
	$ 180	$ 281	$ 296
Subtotal, Cooperative Agreements	$ 180	$ 281	$ 296
Generic Research and Development Studies	Conduct research and development work on topics important to long-term storage spent fuel, i.e., (1) complete Virginia Power/DOE Cooperative Agreement demonstrations to support at-reactor dry storage licensing at Surry and other utilities; (2) validation of COBRA-SFS and HYDRA-II computer codes to permit accurate predictions of heat transfer characteristics of dry storage systems; and (3) initiate analytic support to the Behavior of Spent Fuel in Long-Term Storage Project being conducted at Idaho National Engineering Laboratory	Conduct research and development work on topics important to long-term storage spent fuel, i.e., (1) complete COBRA-SFS and HYDRA-II computer codes, and submit to the Nuclear Regulatory Commission; (2) validate code with cask under transient temperature state; and (3) continue analytic support to the Behavior of Spent Fuel in Long-Term Storage Project. This activity will support the design, licensing and operation of dry storage installations. Conduct international information exchanges through the IAEA.	Conduct research and development work on topics important to long-term storage spent fue, i.e., modeling the transportable storage cask profiles. Continue analytic support to the Behavior of Spent Fuel in Long-Term Storage Project. This activity will support the design, licensing and operation of extended dry storage installations. Conduct international information exchanges through the IAEA. Interact with ASCL to monitor Canada's experiment with dry storage of PWR fuel.

III. Civilian Radioactive Waste Research and Development (Cont'd):
Spent Fuel Storage Development (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Generic Research and Development Studies (Cont'd)	(INEL). This activity will support the design, licensing and operation of dry storage installations. Conduct international information exchanges through the International Atomic Energy Agency (IAEA).		
	$ 139	$ 273	$ 293
Cooperation with Non-Nuclear Weapons States	Continue cooperative information exchanges.	Continue cooperative information exchanges.	Eliminate funding for cooperative information exchanges due to a lack of requests for information.
	$ 20	$ 20	$ 0
Subtotal, Spent Fuel Storage Development	$ 539	$ 574	$ 589
Program Direction	Continue to manage Storage R&D subprogram activities, including dry storage project activities and spent fuel storage technology development activities at Headquarters, Idaho Operations Office and Richland Operations Office.	Continue to manage Storage R&D subprogram activities, including dry storage project activities and spent fuel storage technology development activities at Headquarters, Idaho Operations Office and Richland Operations Office.	Continue to manage Storage R&D subprogram activities, including dry storage project activities and spent fuel storage technology development activities at Headquarters, Idaho Operations Office and Richland Operations Office.
	$ 107	$ 110	$ 110
Civilian Radioactive Waste Research and Development	$ 646	$ 684	$ 699

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Environment, Safety and Health

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENVIRONMENT, SAFETY AND HEALTH

VOLUME 2

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Department of Energy
FY 1996 Congressional Budget Request
Energy Supply, Research and Development

Summary Overview

Energy Supply, Research and Development Asst. Sec for ES&H	FY 1994	FY 1995	FY 1996
Environment, Safety and Health	141,104	126,740	149,579
Use of Prior Year Balances	(35,000)	0	(4,186)
Contractor Pay Freeze	(945)	0	0
Subtotal, ES&H	105,159	126,740	145,393
Nuclear Safety Policy	14,654	17,180	17,180
Environmental Analysis a/	9,650	0	0
Use of Prior Year Balances	(169)	0	0
Subtotal, Environmental Analysis	9,481	0	0
Scientific Engineering, Training & Dev't a/	4,871	0	0
Total ESR&D	134,165	143,920	162,573

a/
Environmental Analysis and Scientific Engineering, Training and Development is funded under the Departmental Administration appropriation for FY95 and beyond. Text for these activities is found in the Departmental Administration Appropriation as well.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ENVIRONMENT, SAFETY AND HEALTH

The Office of Environment, Safety and Health is a corporate resource that fosters Departmental excellence through innovative leadership in the protection of workers, the public, and the environment. This commitment to excellence will be demonstrated by striving for continuous improvement in developing meaningful programs and policies; conducting independent oversight of environment, safety, health and security performance; and providing technical assistance, resources and information sharing.

Under Secretary O'Leary's leadership, we have brought together several factors that have laid the groundwork for a new approach to protection of worker and public health and safety, and environmental integrity at the Department of Energy. As a first step, the Secretary in June 1993 realigned major elements in the Department of Energy. This included the consolidation of several heretofore scattered functions, including the Office of Nuclear Safety, the Office of Nuclear Safety Policy and Standards, and the Departmental Representative to the Defense Nuclear Facilities Safety Board, into the Office of Environment, Safety and Health. A second achievement has been the development of a strategic planning process at the Office of Environment, Safety and Health. We now have a plan that sets forth our goals and provides clear milestones and measures of progress. This plan is aimed at targeting the expertise and resources of the Office of Environment, Safety and Health on our commitment to make the Department of Energy a safer place.

A third action, that grew out of the strategic planning effort, is a proposal to reorganize the Office of Environment, Safety and Health. Based on customer input and staff experience, the proposed reorganization of the Office of Environment, Safety and Health is designed to allow for us to better meet our customers needs: oversight which is value-added, not just a listing of what's wrong or missing; clear, risk-based guidance and standards, tied to explicit performance measures; technical assistance which is conducted in partnership with Department line programs and Field Offices; leadership in addressing Department-wide problems, facilitating solutions, advocating Department interests in Congress; and open, proactive communications.

Highlights of the new organization include:

. A dedicated organization for independent oversight of Department of Energy facilities employing a combination of two complimentary approaches: the use of site representatives as eyes and ears in the field, and multidisciplinary program assessments focused on Field Office environment, safety and health performance. All of our field appraisal and audit functions from several different offices would be combined under the direction of a single office. This is a fundamental change from our current structure, under which several offices are each responsible for different types of field appraisals, while at the same time having responsibilities for developing policy, conducting training, and providing line managers with technical assistance.

. Technical assistance focused on a better use of technical expertise to meet Department needs. Cross-cutting teams will be used to efficiently address specific issues, such as vulnerability studies, standards implementation, and line programs' budgeting and training for meeting environment, safety and health requirements.

. Health studies designed to carry out the medical surveillance mandate of the Defense Authorization Act of 1993, shape epidemiologic studies to meet current and future needs, and to establish a strategy for radiation health effects research.

. Strengthening the core business processes of the Office of Environment, Safety and Health, including strategic quality planning, financial management, information management, training and professional development, quality management, and customer service.

The Fiscal Year 1996 budget request for the Office of Environment, Safety and Health reflects these priorities. It is important to note that the

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budget request for the Office of Environment, Safety and Health programs is contained in several Appropriation Programs under the Energy and Water Development Appropriation as follows:

. Energy Supply Research and Development (YA) - Environment, Safety and Health program, and Nuclear Safety Policy program.

. Defense Environmental Restoration and Waste Management (TE) - Dose Reconstruction program.

. Weapons Activities (TC) - Marshall Islands program, and Departmental Representative to the Defense Nuclear Facilities Safety Board program.

. Other Defense Activities (TF) - Security Evaluations program, and Nuclear Safety program.

Attached to this request are comparability matrices which delineate the funding between this and previous requests.

FY 1996 Goals for the Office of Environment, Safety and Health are:

. Fully integrate consistent, multidisciplinary oversight processes within the Office of Environment, Safety and Health that are coordinated with field and program offices and focused on significant issues and linked to lessons learned.

. Continue the quality, timely, efficient, and effective environment, safety and health technical assistance program that meets priority needs with high customer satisfaction.

. Continue an effective system of policies, requirements, guidance and technical standards that significantly increase protection of the environment and enhances public and worker safety and health.

. Establish an integrated, state-of-the-art information management program that will: deliver information to the right customers in the right form at the right time; improve communications of lessons learned; and enhance environment, safety and health performance.

. Continue process that encourages managers to use the National Environmental Policy Act in decision-making, builds public trust, and minimizes the cost and time for document preparation and review with no reduction in quality.

. Establish a Department-wide business and budget planning process that: identifies environment, safety, and health vulnerabilities and reduces vulnerabilities; enables effective line program allocation of environment, safety, and health resources.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Environment, Safety and Health

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Environment					
Operating Expenses	$ 16,760	$ 14,190	$ 0	$ 14,190	$ 7,200
Worker Health & Safety					
Operating Expenses	$ 30,852	$ 25,011	$ 0	$ 25,011	$ 29,415
Health Studies					
Operating Expenses	$ 49,981 a/	$ 43,472	$ 0	$ 43,472	$ 61,072
Oversight					
Operating Expenses	$ 13,689	$ 11,750	$ 0	$ 11,750	$ 13,325
Planning & Administration					
Operating Expenses	$ 28,259 b/	$ 30,817	$ 0	$ 30,817	$ 37,067
Capital Equipment	1,563 c/	1,500	0	1,500	1,500
Subtotal, Planning & Administration	$ 29,822	$ 32,317	$ 0	$ 32,317	$ 38,567
Subtotal, Environment, Safety and Health	$ 141,104	$ 126,740	$ 0	$ 126,740	$ 149,579
Adjustment	-35,945 d/	0	0	0	-4,186 e/
TOTAL	$ 105,159	$ 126,740	$ 0	$ 126,740	$ 145,393
Summary					
Operating Expenses	$ 103,596	$ 125,240	$ 0	$ 125,240	$ 143,893
Capital Equipment	1,563	1,500	0	1,500	1,500
Total Program	$ 105,159	$ 126,740	$ 0	$ 126,740	$ 145,393
Staffing (FTEs)	280	343	0	343	347

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LEAD TABLE - Environment, Safety and Health (cont'd)

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"

a/ Health Studies includes a reduction of $261,000 for Small Business Innovative Research.
b/ Includes a $3,302,000 recision.
c/ Includes a $37,000 recision.
d/ Adjustments are a $35,000,000 prior year balances reduction, and a $945,000 contractor pay freeze.
e/ Adjustment is a $4,186,000 reduction for prior year balances.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENT, SAFETY AND HEALTH

I. Preface: Environment

The mission of the Deputy Assistant Secretary for Environment, is to promote environmentally sound practices throughout the Department, and to support program and field offices in achieving this end by providing technical assistance in meeting current and oncoming compliance issues. The Deputy Assistant Secretary for Environment has two main programmatic components: the NEPA Policy and Assistance program, and the Environmental Policy and Assistance program.

The NEPA Policy and Assistance program supports the timely implementation of the Department's proposed actions by assuring compliance with the National Environmental Policy Act (NEPA) and related environmental review requirements that are necessary prior to project commitment. The Office is responsible for supporting NEPA-related activities in all DOE program areas, covering the full range of energy, waste management, and weapons complex technologies and facilities, and associated environmental issues. Because compliance with NEPA is a prerequisite to implementation of nearly all of the Department's programs and projects, timely and adequate NEPA documents are critical to the attainment of the Department's program objectives. Recent DOE NEPA compliance initiatives, including the Secretary's June 1994 NEPA Policy, expanded EH assistance, and guidance functions, while also emphasizing and strengthening program and field management's primary responsibilities for NEPA compliance.

The Fiscal Year 1996 goals of the Office of NEPA Policy and Assistance include:

- Reviewing highly-complex project documents for technical adequacy and accuracy including major programmatic and site-wide environmental impact statements;

- Providing technical assistance in the preparation of NEPA and related environmental documents (e.g., environmental assessments and environmental impact statements and litigation support);

- Developing and distributing of NEPA compliance policy documents and notices, guidance and manuals;

- Continuing to coordinate project management reviews for Major System Acquisition projects;

- Conducting NEPA compliance workshops for program and field office personnel; and

- Continuing to revise NEPA regulations.

The Environmental Policy and Assistance program develops Department- wide environmental protection policies and complex-wide strategies for protecting the public and the environment and for attaining and maintaining environmental compliance with internal and external environmental requirements; to assist Department program and field offices in understanding and implementing environmental requirements; and to assist program and field offices in averting oncoming environmental compliance problems.

The Fiscal Year 1996 goals of the Environmental Policy and Assistance program include:

- Continuing interaction and coordination with DOE field and program offices and other Federal agencies;

- Implementing the DOE Order on Environmental Compliance Issue Coordination (DOE 5400.2A);

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I. Environment (Cont'd)

- Developing and disseminating written Departmental compliance policies and strategies.

- Continuing review of environmental legislation/regulations applicable to DOE projects and operations;

- Continuing to work with EPA and other Federal agencies to ensure that the Department's position is appropriately represented in the development of environmental regulatory requirements;

- Continuing development and issuance of DOE-wide environmental policies, regulations, standards, directives, and guidance; and

- Implementing an outreach program for technical assistance and continual improvement in environmental protection.

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II. A. Summary Table: Environment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
NEPA Policy & Assistance	$ 5,850	$ 4,560	$ 3,500	$ -1,060
Environmental Policy & Assistance	10,910	9,630	3,700	-5,930
Total, Environment	$ 16,760	$ 14,190	$ 7,200	$ -6,990

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment			
NEPA Policy & Assistance	Completed an estimated 500 major document reviews (EAs and EISs). Completed timely reviews for several thousand other NEPA-related actions. Provided support for two major programmatic EISs: environmental restoration and waste management and defense complex reconfiguration. Continued support for 5 site-wide EISs, and litigation support, as needed. Developed and issued NEPA-related policy, guidance and assistance actions, and conducted 3 NEPA compliance workshops. Provided NEPA strategy assistance required to support implementation of decisions based on programmatic EISs for Defense Complex Reconfiguration, and for Environmental Restoration and Waste Management. Provided limited specialized training for NEPA Compliance Officers. Provided internal oversight, including limited program line management NEPA audits required pursuant to DOE 5440.1E. ($5,850)	Complete an estimated 500 major document reviews (EAs and EISs) in a timely manner, assuming that the quality of routine documents continues to improve relative to previous years as a result of continuing guidance and training efforts, including DOE's "Recommendations for the Preparation of EAs and EISs," issued in 1993. Complete timely reviews for several thousand other NEPA-related actions. Continue support for two major programmatic EISs: environmental restoration and waste management and defense complex reconfiguration. Continue support for 3-5 site-wide EISs, and full litigation support as needed. Maintain adequate level of effort on NEPA-related policy, guidance and assistance actions, and conduct at least 3 NEPA compliance workshops. Provide NEPA strategy assistance required to support implementation of decisions based on programmatic EISs for Defense Complex Reconfiguration, and for Environmental Restoration and Waste Management. Provide limited specialized training for NEPA Compliance Officers. ($4,560)	Review and recommend approval for an estimated 50 EISs and approximately 100 related NEPA documents. Review more than a thousand other NEPA-related actions. Provide support for 4 major programmatic EISs (Environmental Management, Tritium Supply and Recycling, Stockpile Stewardship, and Fissil Materials Disposition). Continue support for 5 to 6 sitewide EISs, and provide full litigation support as needed. In furtherance of the goals of the June 1994 Secretarial Policy on NEPA, provide NEPA-related policy, guidance and assistance actions, and conduct at least 2 NEPA compliance workshops. Determine customer needs and prepare, update and disseminate guidance on the most urgent NEPA topics. Develop training materials to develop a more efficient group of headquarters and field NEPA personnel and ensure consistency of delegated and nondelegated NEPA reviews. Measure performance and foster continuing improvement of the NEPA process; issue a quarterly report of lessons learned preparing NEPA documents. Revise DOE Order 5440.1E and 10 CFR 1021 as appropriate. Coordinate Office of Environment, Safety and Health review per DOE Order 4700.1 and ensure early incorporation of environmental reviews in project planning. ($3,300)
	$5,850	$4,560	$3,500

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III. Environment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Policy & Assistance	Provided technical support for evaluation and resolution of complex-wide crosscutting compliance issues. Provided analytical support for proposed strategies to address these issues. Provide technical input for use in interagency regulatory negotiations for the resolution of higher priority mixed waste and materials management issues. Provided support to the Department's Compliance Roundtable established to bring program/ field representatives together to discuss existing and future DOE compliance policies and crosscutting issues. Supported DOE participation in interagency Federal facility forums (e.g., Keystone, Federal Facility Experts group). Provided technical support in the preparation of crosscutting DOE documents (e.g., A-106 reports, CERCLA 120 Reports). Provide technical support for\collection of site specific information needed to prioritize and resolve significant crosscutting environmental compliance issues. Provide technical and regulatory compliance information needed to support EH in interfacing with other Federal agencies (e.g., EPA, DOD) in the resolution of significant intergovernmental Federal facility compliance issues and disputes. Provide technical assistance and regulatory analyses as background support for the negotiation of compliance and cleanup agreements of national or precedent-setting significance. Support the oversight of consistent implementation of Departmental compliance policies and guidance by field and program offices. Provide technical support in the review of line management compliance programs and key regulatory documents. Provide	Provide support for evaluation and resolution of complex-wide crosscutting compliance issues. Provide analytical support for proposed strategies to address these issues. Provide technical input for use in interagency regulatory negotiations for the resolution of higher priority mixed waste and materials management issues. Provide support to the Office's Compliance Roundtable which brings program/field representatives together to discuss existing and future DOE compliance policies and crosscutting issues. Provide technical and policy advice to efforts to revise DOE's waste management orders, and to implement the requirements of the Federal Facility Compliance Act. Coordinate DOE's responses to EPA's multimedia enforcement initiative. Provide technical support in the preparation of crosscutting DOE documents (A-106 Reports). Provide technical support for collection of site specific information needed to prioritize and resolve significant crosscutting environmental compliance issues. Provide technical and regulatory compliance information needed to support EH in interfacing with other Federal agencies (e.g., EPA, DOD) in the resolution of significant intergovernmental Federal facility compliance issues and disputes. Provide technical assistance and regulatory analyses as background support for the negotiation of compliance and cleanup agreements of national or precedent-setting significance. Support the oversight of consistent implementation of Departmental compliance policies and guidance by field and program offices. Provide technical support in the review	Develop and advocate DOE position on 45 rules per year (includes regulatory analysis, Weekly Digest, Regulatory Update Table, and Management Information Systems). Develop and issue 20 policy and guidance documents. Continue with Part 834 rule and revise DOE Orders relating to environmental protection. Develop and conduct 5 workshops for 400 participants. Provide technical assistance for: Program/Facility compliance through the National Association of Attorneys' general issue coordination project, document reviews, pilot projects and participation in non-EH workshops/conferences/meetings. Provide support for compliance tracking/analysis/reporting including enforcement actions, NESHAPs, fines & penalities, CERCLA docket, agreements, and annual environmental monitoring. Provide technical assistance for environmental justice activities; risk assessment tasks and modeling tasks. ($3,700)

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III. Environment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Policy & Assistance (Cont'd)	technical assistance in the preparation and coordination of statutorily-mandated DOE reports which involve site specific data (e.g., RCRA Section 3016 Inventory). Continued support for training of DOE and contractor management and staff. Continue Federal Register Digest and Regulatory Review System to track emerging environmental regulations; distribute these products into a DOE-wide electronic system for wider, faster access. Continue to coordinate DOE reviews on rulemakings and issues and to prepare DOE comments and provide feedback to DOE commenters. The number of legislation/ regulation packages requiring review and analysis has been significant over the past few years, and it is expected that there will be more in FY 1994. Priorities include implementing regulations for Clean Air Act (CAA) Clean Water\Act (CWA), RCRA, CERCLA and radioactive waste disposal standards. Specific reviews and analyses will include residual radioactivity and cleanup standards and new hazardous waste requirements. Continue scientific and technical reviews of radiation standards. Continue development and issuance of DOE-wide environmental policies, standards, directives/ regulations, and guidance. Continue workshops to ensure understanding of internal and external environmental requirements. Provide guidance and workshops on CAA, CWA, RCRA and CERCLA regulatory requirements. Activities related to establishing radioactivity standards, perhaps through rulemakings, should peak this fiscal year. Continue to update selected environmental regulatory Reference Books. Initiate or continue special projects. Continue support of Environmental Restoration	of line management compliance programs and key regulatory documents. Provide technical assistance in the preparation and dissemination of information briefs, compliance analyses, data management systems, and other special projects which provide up-to-date compliance status information to Departmental organizations. Continued support for training of DOE and contractor management and staff. Continue Federal Register Digest and Regulatory Review System to track emerging environmental regulations. Continue to coordinate DOE reviews on rulemakings and issues and to prepare DOE comments and provide feedback to DOE commenters. Priorities include implementing regulations for Clean Air Act (CAA) Clean Water Act (CWA), RCRA, CERCLA, radioactive waste disposal standards and residual radioactive material release standards. Specific reviews and analyses will include residual radioactivity and cleanup standards and new hazardous waste requirements. Continue scientific and technical reviews of radiation standards. Continue development and issuance of DOE-wide environmental policies, standards, directives/ regulations, and guidance. Continue workshops to ensure understanding of internal and external environmental requirements. Provide guidance and workshops on CAA, CWA, RCRA and CERCLA regulatory requirements. Continue radiation protection standard development and guidance. Develop supporting data and analysis for residual radioactive release standards, risk-based standards, and assessment. Continue to update selected environmental regulatory Reference Books. Initiate or continue special projects. Continue support of	

III: Environment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Policy & Assistance (Cont'd)	and Waste Management programmatic efforts. ($10,910)	Environmental Restoration and Waste Management programmatic efforts. Operate EnviroText system DOE-wide access. ($9,630)	
	$10,910	$9,630	$3,700
Environment	$16,760	$14,190	$7,200

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENT, SAFETY AND HEALTH

I. Preface: Worker Health & Safety

Worker Health and Safety develops, manages, and directs comprehensive programs that assist line management in continuous improvements for protecting the health and safety of workers at all Department of Energy facilities. This program includes three major subprograms: Occupational Safety and Health Policy, Worker Protection Programs and Hazards Management, and Field Support described as follows:

Safety and Health Policy is focused on establishing state-of-the-art policies, programs, standards, and training that protect the Department's Federal and contractor personnel from exposure to occupational injury and illness. The program maintains professional expertise in many occupational safety and health specialty areas including industrial hygiene, safety engineering, and construction safety. (Includes functions previously funded under Occupational Safety: Policy and Standards, Technical Support, Personnel Protection, Occupational Safety Training Program, System Safety Techniques Training, and Technical Information Exchange).

Worker Safety Protection and Hazards Management Program Development establishes comprehensive and integrated programs for the protection of workers from hazards in the workplace and assists in program implementation. The program maintains direct partnership with field headquarters and field programs, e.g., with the Office of Environmental Management to develop integrated, comprehensive, and field tested policy, standards, and guidance for programs to enhance hazardous waste activities worker protection. Particular emphasis is placed on providing technical expertise to Field Support for direct field assistance with the Office of Environmental Management to accelerate implementation of the integrated policies, standards, and guidance for all aspects of worker protection in the conduct of hazardous waste activities. The program also establishes and manages, for the Department, an integrated, comprehensive worker hazards management program. The program maintains liaison with national and international standards-setting organizations. It manages the Departments Laboratory Accreditation Program for personnel radiation dosimetry and radiation detection instrument calibration programs. (Includes functions previously funded under Health Physics and Industrial Hygiene.)

Field Support assists line management of Headquarters, Field, and contractor organizations achieve excellence in worker safety and health through integrated multi-discipline field operational support, assistance, lessons learned, and training activities. The program draws on all elements of the Office of Environment, Safety and Health and will carry out its mission through a variety of mechanisms, such as mentoring; expert team assistance in specific worker safety and health areas; and through an outreach program which includes seminars, publications, and workshops. It also provides or arranges for expert field support in specialized areas, such as chemical hazards, high explosives, risk assessment, firearms, etc. The program conducts trend analysis of Department of Energy safety and health data (e.g., ORPS, CAIRS, and oversight reports) and uses lessons learned from accident investigations and corrective actions to identify areas requiring assistance. It also provides field support and is responsible for operations, maintenance, and management assistance in aviation for the Department of Energy. (Includes functions previously funded under Risk Analysis and Technology: Risk Management, Cleanup Worker Safety, and Aviation Safety; functions previously funded under Performance Assessment: Performance Assessment and Quality Assurance plus a new Mentoring Initiative.)

The Office of Information Resources Management maximizes the sharing and efficient use of data and information. The Office will develop and manage a centralized authority to inventory, integrate and facilitate access to and use of all data and information resources necessary for planning, decision-making, and successful conduct of the programs and activities of the Office of Environment, Safety and Health (EH). The Office will also provide and manage the computer hardware and connectivity that allows access to data and information and enables communication throughout EH, between EH and DOE, between EH and other external systems, and between EH and its contractors, stakeholders and the public. (Includes activities previously funded under Occupational Safety: Safety Performance Measurement System.)

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II. A. Summary Table: Worker Health & Safety

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Safety & Health Policy	$ 10,705	$ 7,906	$ 9,988	$ 2,082
Worker Safety Protection & Hazards Management	12,960	10,700	12,950	2,250
Field Support	4,687	2,905	4,320	1,415
Information Resources Management	2,500	3,500	2,157	-1,343
Total, Worker Health & Safety	$ 30,852	$ 25,011	$ 29,415	$ 4,404

II. B. Laboratory and Facility Funding Table: Worker Health & Safety

All Other	$ 30,852	$ 25,011	$ 29,415	$ 4,404
Total, Worker Health & Safety	$ 30,852	$ 25,011	$ 29,415	$ 4,404

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Worker Health & Safety			
Safety & Health Policy	Develop and maintain effective occupational safety and health policies, programs, standards and procedures for implementation throughout the department. Interface with outside agencies. Develop order for contractor employees. Conduct program activities through meetings, conferences, formal working agreements, and issuing technical information. Provide regulatory and industry issue tracking and policy development. Implement a Federal employee occupational safety and health program which complies with 29 CFR Part 1960. Provide technical support to contractors, operations offices, and line program managers in development and implementation of specific occupational safety and health	Continue FY 1994 programs. Expand development of exemplary occupational safety and health programs by pilot testing up to 6 Departmental sites. Conduct surveillance of workplaces with large numbers of Department of Energy employees and potentially hazardous work conditions. Complete 29 CFR Part 1910.121 training accreditation, and certification requirements of Section 3131 Defence Authorization Act. Transfer delivery of developed courses to line organizations. ($7,906)	Continue FY 1995 programs. Continue to develop and issue a Construction Safety Program Order and begin implementation assistance. Further develop technical and program requirements in functional areas including fire protection, electrical safety, explosives safety, pressure and systems safety, hoisting and rigging, and others that arise out of operational incidents. Develop exemplary occupational safety and health technologies and programs at departmental sites. Focus on completing existing inventory and database for suspect parts. ($9,988)

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III. Worker Health & Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Safety & Health Policy (Cont'd)	programs. Implement a program to recognize occupational safety and health program performance excellence. Interpret occupational safety and health standards and requirements. Develop technical and program requirements in functional areas. Provide Occupational Safety and Health employee and supervisor training programs and develop 29 CFR Part 1910.121 training accreditation and certification. ($10,705)		
	$10,705	$7,906	$9,988
Worker Safety Protection & Hazards Management	Activities included within this program are those related to Health Physics and Industrial Hygiene. Health Physics related program activities supported include: Health Physics Policy, Standards, and Criteria Development; Health Physics Technical Support and Assistance; the DOE Laboratory Accreditation Program (DOELAP); funding for basic applied health physics research; funding for graduate fellowships in the radiation protection/health physics field; continuing support to graduate level university research grants for radiation protection/health physics research. Industrial Hygiene related program activities supported include: Industrial Hygienic Policy, Standards, and Criteria Development; Industrial Hygiene Technical Support and Assistance; funding for research and development in industrial hygiene technologies such as exposure monitoring instrumentation, protective clothing testing methods, and	Continue the FY 1994 Program at the same level with the following changes or exceptions: Health Physics (HP) Policy, standards and criteria development reduced and focused on external and internal dosimetry, dose reporting, and radiological surveys. HP Technical Assistance focused in centers of excellence, special studies, line assistance, and transfer of new techniques. DOELAP activities include a bioassay accreditation program and participation in Federally Owned Secondary Laboratory Accreditation Program at the National Institute of Standards and Technology (NIST). Continue support of FY 1994 HP Graduate fellows but decrease new fellows. Continue support of FY 1994 HP Grants but no new grants. Fund new dose reconstruction activity in areas contaminated by prior nuclear testing and DOE activities to establish scientifically defensible data and	Continue FY 1995 program at the same level with the following exceptions: Further reduce policy, standards and criteria development funding with focus on maintaining and update of basic radiation protection policy documents. Reduce research and development funding but continue development of technological base needed to comply with radiological protection guidance in 10 CFR Part 835 and Radiological Control Manual. Implement accreditation program for bioassay measurements and extremity dosimetry and an Intercomparison Program for personnel nuclear-accident dosimeters. Continue support of FY 1995 HP Graduate Fellows and increase new fellows including support of health physics students at minority colleges. Continue support of HP Grants with some increase. Establish program to assess data related to radiation exposure and associated international health status of populations exposed to ionizing

III. Worker Health & Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Worker Safety Protection & Hazards Management (Cont'd)	respirator acceptance protocols; funding for graduate fellowships to ensure the DOE has graduate level training industrial hygienists to develop, implement and assess the DOE's industrial hygiene programs; and funding to develop requirements and strategies to obtain and manage meaningful employee exposure data to assess the effectiveness of industrial hygiene exposure control efforts. ($12,960)	models. Industrial Hygiene (IH) Policy, standards, and criteria development reduced and focused on collaborative efforts with DOE elements, other agencies and unions. IH Technical Assistance focused on 3 centers of excellence for personal protective equipment, toxic material, physical hazards, IH data, and exposure assessments. Continue research focused on highly hazardous workplaces such as remediation sites and chemical protective clothing. Reduce IH fellowship training. ($10,700)	radiation. Further reduce policy and guidance development projects. Increase IH Technical Assistance funds focused on personnel protective equipment, toxic material, physical hazards, IH data, and exposure assessments, and ergonomics. Discontinue research and development activity. Implement new exposure surveillance program for both Health Physics and Industrial Hygiene. ($12,950)
	$12,960	$10,700	$12,950
Field Support	Activities included within this Program are those related to Risk Management and Chemical Safety; Risk Characterization in support of cleanup worker safety activities; aviation safety technical assistance; occupational safety and health assistance visits; quality assurance, in particular activities addressing suspect and counterfeit parts; and a mentoring program. Risk Management activities focused on worker safety issues; publishing the "Risk Management Quarterly;" and conduct of an annual DOE risk Management meeting. Chemical process safety activities include development and coordination of Process Safety Management and Process Hazards Analysis Standards; 4 process safety training courses; Management Response Plan for chemical safety vulnerability review; initiation of a highly	Continue conducting the same programs as accomplished in FY 1994. In addition, coordinate EH risk assessment activities, support development and implementation of Department of Energy risk management strategies for worker safety. Initiate scoping assessment to determine relative risks of Department of Energy "C-Rank" methodology to rank facilities covered by the Occupational Safety and Health Administration chemical process safety rule. Continue assistance on PUREX deactivation and initiate safety analysis report/health and safety plan preparation integration assistance to other cleanup sites. Provide technical assistance on resolving safety and health issues, including review of Nuclear Regulatory Commission, Department of Energy, and Environmental Protection Agency cleanup criteria, review of Office of	Continue FY 1995 Programs at the same level. In addition, continue support and implementation of a risk-based, integrated safety and health management strategy for DOE cleanup activities. Continue implementation of Management Response Plan for the chemical safety vulnerability review, including support and assistance activities. Continue FY 1995 chemical safety and high hazards activities. Support implementation of the cleanup worker safety "handbook." Conduct technology transfer, including workshops and seminars, on subjects such as hazard characterization, risk management, and safety and health integration. Provide technical assistance to cleanup sites as required. Continue FY 1995 Aviation Safety program upgrades; develop and maintain program for statistical

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III. Worker Health & Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Field Support (Cont'd)	hazardous chemical risk reduction program with focus on chlorine; and analysis and reporting of chemical incidences. Hazard assessment activities included technical assistance to the Office of Environmental Management developing a safety strategy, a safety analysis report, and health and safety plan preparation for PUREX deactivation. Support the cleanup worker safety initiative in developing hazard characterization guidance for Departmental cleanup activities, and in developing an integrated safety and health strategy for conducting Department of Energy cleanup activities. Aviation Safety assistance included improved program reviews, technical assistance, and regulatory and standards development support; conduct of review of aviation operations; and initiated revision of 2 new Department Orders addressing chartering aircraft and aviation safety documentation requirements. The mentoring initiative was begun in FY 1994 providing Environment, Safety and Health technical assistance to upgrade Hanford Tank Farms operations and other Hanford sites, and a pilot program at the Idaho National Engineering Laboratory. Conducted 6 Occupational Safety Assistance visits and developed quality assurance program guidance. ($4,687)	Environmental Management safety and health standards, and support Office of Environmental Management in operations readiness reviews and site visits. Upgrade Department Aviation Safety Order to address aircraft charter procedures; initiate statistical analysis of aviation accidents and incidents; establish Department-wide aviation safety committee; conduct field aviation safety program reviews; provide technical assistance to operations offices in the implementation of aviation safety programs. Establish the mentoring program to provide assistance based on FY 1994 experience. This program starts the assistance but the funds to continue are provided by the program office. FY 1995 program will initiate and administer 6 Department of Energy site assistance activities. Conduct quality assurance training assistance visits and testing. Establish database for suspect parts. ($2,905)	analysis of aviation accidents and incidents; continue to support Department-wide aviation safety committee; conduct aviation safety program reviews. Continue FY 1995 mentoring program. Provide initiation costs and administrative support for 6 more environment, safety and health assistance programs. ($4,320)
	$4,687	$2,905	$4,320

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III. Worker Health & Safety (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Information Resources Management	Continue FY 1993 level of operation of the Safety Performance Measurement System program with reduced funding due to completion of the Occupational Safety and Health Administration Computerized Information System database linkage. Begin phased transition of key Safety Performance Measurement System functions, such as the Computerized Accident/Incident Reporting System to the Environment, Safety and Health Technical Information System enhanced computer platform through module development and data transfer. Both computer systems will operate in parallel to ensure continued availability of existing Safety Performance Measurement System services during the transition period. ($2,500)	Continue operation of the Safety Performance Measurement System at reduced level until phased transition to the Environment, Safety and Health Technical Information Services is completed at the end of FY 1995. The system will be fully operational by the end of FY 1995; at which time the Safety Performance Measurement System will be shutdown. The Environment, Safety and Health Technical Information Services will contain the databases from the Safety Performance Measurement System. In addition to its safety and health database information retrieval capabilities, the system will provide additional services such as global E-mail, file transfer, bulletin board, and special interest groups to allow safety and health professionals to electronically share their knowledge experiences and lessons learned. ($3,500)	Complete the transition of the Safety Performance Measurement System to the Environment, Safety and Health Technical Information Services. Continue to provide computer capabilities to support the Office of Environment, Safety and Health information needs. ($2,157)
	$2,500	$3,500	$2,157
Worker Health & Safety	$30,852	$25,011	$29,413

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENT, SAFETY AND HEALTH

I. Preface: Health Studies

The Health Studies program includes Epidemiologic Studies, International Health Studies, and Occupational medicine. The Epidemiologic Studies program is responsible for technical and policy functions related to epidemiologic studies of workers and populations of host communities for the Department of Energy facilities. The Occupational Medicine program establishes the policies and guidelines for occupational medicine services being provided at DOE contractor facilities and ensures their effectiveness through the provision of technical assistance and the performance of routine program effectiveness reviews of the individual contractor medical programs. The International health Studies program is responsible for the programmatic development and direction of all DOE sponsored international environmental and occupational health studies. The International program sponsors and funds DOE involvement in all international studies of populations historically exposed to ionising radiation and coordinates with other U.S. agencies and other international organizations to conduct such studies.

The fiscal year 1996 goals of the office are:

- Continue work on the pilot of the medical surveillance program as mandated in Public Law 102-484.
- Continue with DOE contractor occupational medical program reviews and expand the program reviews to include the occupational medical component of the Federal Employee Occupational and Safety and Health Program (FEOSH).
- Expand Contractor Occupational Medical Profile Data Base (COMPDB) for all DOE contractor occupational medical program sites.
- Provide for the development of new and revised regulations, rules, standards and guidelines such as protective force and firefighters, human reliability and employee assistance programs.
- Continue support for the Radiation Effects Research Foundation, a bi-national (Japan and the U.S.) health effects research foundation.
- Continue collaborative health research in Belarus, Ukraine, and Russia under the authority of the Working Group 7 and the new bi-national agreement with Russia.
- Initiate several health studies in the Russian Federation at the sites of past nuclear incidents under the auspices of the Joint Coordinating Committee for Radiation Effects Research (JCCRER).
- Continue development of epidemiologic tools for worker surveillance, including the monitoring of morbidity in the workforce, and identification of any groups that may be at increased risk of occupationally related diseases.
- Enhance public access and facilitate independent review of DOE epidemiologic data.
- Maintain the Comprehensive Epidemiologic Data Resource.
- Coordinate and implement new or revised Memoranda of Understanding with the Department of Health and Human Services for the conduct of occupational and environmental epidemiologic studies.
- Continue sponsorship of independent health related research through the State Health Agreement Program and the Transuranium Registries.

I. Health Studies (Cont'd)

- Continue development and dissemination of information on human health effects through publications, such as the Health Bulletin, Health Watch, DOE Health Beat, and Health Hazard Alert.

II. A. Summary Table: Health Studies

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Occupational Medicine	$ 1,090	$ 3,650	$ 6,650	$ 3,000
Epidemiologic Studies	26,574	17,827	27,322	9,495
International Health Studies	22,317	21,995	27,100	5,105
Total, Health Studies	$ 49,981	$ 43,472	$ 61,072	$ 17,600

II. B. Laboratory and Facility Funding Table: Health Studies

All Other	$ 49,981	$ 43,472	$ 61,072	$ 17,600
Total, Health Studies	$ 49,981	$ 43,472	$ 61,072	$ 17,600

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Health Studies			
Occupational Medicine	Develop and implement clinical surveillance components of the comprehensive occupational health surveillance system. Identify current and former employees who worked with beryllium and offer a chronic Beryllium disease screening program to all potentially exposed workers. Continue a radiation worker surveillance pilot program at Rocky Flats. Provide funds to support new and revised regulations, standards, and guidelines for DOE contractor occupational medicine programs. Provide training and technical assistance to DOE contractor medical programs. Medical Monitoring & Clinical Surveillance - $250 Policy Standards Development - $500 Training & Technical Assistance - $340 ($1,090)	Continue implementation of the clinical surveillance components of the comprehensive occupational health surveillance system. Initiate a comprehensive program to monitor and provide medical evaluation and surveillance to all former, current, and future DOE employees exposed to hazardous or radioactive substances as required by the National Defense Authorization Act for FY 1993. Continue to identify current and former employees who worked with beryllium and offer a chronic beryllium disease screening program to all potentially exposed workers. Continue a radiation worker surveillance pilot program at Rocky Flats. Provide funds to support new and revised regulations, standards, and guidelines for DOE contractor occupational medicine programs. Provide training and technical assistance to DOE contractor medical programs through a program of routine program effectiveness review visits. Medical Monitoring & Clinical Surveillance - $2,850 Policy Standards Development - $400 Training & Technical Assistance - $400 ($3,650)	Continue the implementation of the clinical surveillance system in the five alpha sites and evaluate the pilot systems. Plan for implementation at the Beta test sites. Continue the national health surveillance database. Initiate a comprehensive program to monitor and provide medical evaluation and surveillance to all former, current, and future DOE Employees exposed to hazardous or radioactive substances as required by the National Defense Authorization Act for FY 1993. Identify current and former employees who worked with beryllium and offer a chronic Beryllium disease screening program to all potentially exposed workers. Continue a radiation worker surveillance pilot project at Rocky Flats. Provide funds to support new and revised regulations, standards, and guidelines for DOE contractor occupational medicine programs. Provide technical assistance to DOE contractor medical programs through a program of routine program effectiveness review visits. Medical Monitoring & Clinical Surveillance - $5,550 Policy Standards Development - $400 Training & Technical Assistance - $700 ($6,650)
	$1,090	$3,650	$6,650

III. Health Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Epidemiologic Studies	Continue to fund those analytic epidemiologic research activities which are managed for DOE by the Department of Health and Human Services (HHS). This work includes ongoing retrospective studies and additional new studies of DOE workers as specified in the joint DOE/HHS research agenda. Continue internally managed epidemiologic research on health effects of DOE workers and other defined populations. This includes descriptive health effects research, biological and molecular epidemiology, and other basic research. Continue development and management of a comprehensive health surveillance system. Continue operation of seven State Health Agreements to provide grant funding to these states to support diverse epidemiologic investigations. Continued support for the operation of the Comprehensive Epidemiologic Data Resource (CEDR) system. Provide for communication of results of health effects studies via publications such as the Office of Health Newsletter, Health Watch, and Health Bulletins. External Epidemiologic Research (HHS MOU) - $8,500 Internal Epidemiologic Research - $3,468 Occupational Epidemiologic Surveillance - $4,917 State Health Agreements - $5,400 CEDR Program - $3,550 Health Communication and Information Dissemination - $1,000	Continue to fund those analytic epidemiologic research activities which are managed for DOE by the Department of Health and Human Services (HHS). This work includes ongoing retrospective studies and additional new studies of DOE workers as specified in the joint DOE/HHS research agenda. Continue internally managed epidemiologic research on health effects on DOE workers and other defined host community populations. This includes descriptive health effects research and studies. Continue the State Health Agreement program that provides grant funding to states to support diverse epidemiologic research, which includes dose reconstructions, feasibility studies, registries and limited episodic epidemiologic investigations. Continue support for the operation of the Comprehensive Epidemiologic Data Resource (CEDR) system. Provide for communication of results of health effects studies via publications such as the Office of Health Newsletter, Health Watch, and Health Bulletins. External Epidemiologic Research (HHS MOU) - $8,000 Internal Epidemiologic Research - $2,005 Occupational Epidemiologic Surveillance - $2,000 State Health Agreements - $4,322 CEDR Program - $1,000 Health Communication & Information Dissemination - $500 ($17,827)	Continue to fund those analytic epidemiologic research activities which are managed for DOE by the Department of Health and Human Services (HHS). This work includes ongoing retrospective studies and additional new studies of DOE workers as specified in the joint DOE/HHS research agenda. Continue internally managed epidemiologic research on health effects on DOE workers and other defined populations. This includes descriptive health effects research and studies. Increased funding will help integrate Office of Health Studies efforts in regard to the comprehensive worker health surveillance system. Continue the State Health Agreement program to provide grant funding to these states to support diverse epidemiologic research. Continue support for the operation of the Comprehensive Epidemiologic Data Resource (CEDR) system. Continue to provide for communication of results of health effects studies via publications such as the Office of Health Newsletter, Health Watch, and Health Bulletins. External Epidemiologic Research (HHS MOU) - $12,000 Internal Epidemiologic Research - $1,400 Occupational Epidemiologic Surveillance - $5,300 State Health Agreements - $7,322 CEDR Program - $800 Health Communication & Information Dissemination - $500

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III. Health Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Epidemiologic Studies (Cont'd)	($26,574)		($27,322)
	$26,574	$17,827	$27,322
International Health Studies	Continue funding the studies of the Radiation Effects Research Foundation, a bi-national health effects research foundation co- funded by the United States and Japan. Provide support and management of DOE activities relating to expanding international collaborative efforts. Major research areas include Chernobyl Working Group 7 activities of the JCCCNRS. Continue technical support to the Government of Spain (project Indalo). Radiation Effects Research Foundation - $20,000 Chernobyl Radiation Health Studies - $2,047 Russian Federation Bi-National Agreement (1994) - $0 Project INDALO - $270 ($22,317)	Continue funding the studies of the Radiation Effects Research Foundation, a bi-national health effects research foundation co- funded by the United States and Japan. Provide support and management of DOE activities relating to expanding international collaborative health effects research efforts. Major research areas include Chernobyl Working Group 7 activities of the JCCCNRS. Initiate new health studies under the 1994 Bi-national Agreement with the Russian Federation. These are environmental and population health studies of radiation exposure due to historic (pre-Chernobyl) nuclear incident in the Russian Federation. Continue technical support to the Government of Spain (Project Indalo). Initiation of a Memorandum of Understanding to support collaborative radiation health studies with the European Union (EC). Continued support and involvement with international organizations on radiation health, such as IAEA, NEA, and WHO. Radiation Effects Research Foundation - $18,000 Chernobyl Radiation Health Studies - $1,725 Russian Federation Bi-National Agreement (1994) - $2,000 Project INDALO - $270 ($21,995)	Continue funding the studies of the Radiation Effects Research Foundation, a bi-national health effects research foundation co- funded by the United States and Japan. Provide support and management of DOE activities relating to expanding international collaborative efforts. Major research areas include Chernobyl Working Group 7 activities. Continue health studies under the 1994 Bi-national Agreement with the Russian Federation. These are environmental and health studies of radiation exposure outside of the Chernobyl area. Continue technical support to the Government of Spain (Project Indalo). Initiation of a Memorandum of Understanding to support collaborative radiation health studies with the European Union (EC). Continued support and involvement with international organizations on radiation health, such as IAEA, NEA, and WHO. Radiation Effects Research Foundation - $20,000 Chernobyl Radiation Health Studies - $3,550 Russian Federation Bi-National Agreement (1994) - $3,250 Project INDALO - $300 ($27,100)

III. Health Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Health Studies (Cont'd)	$22,317	$21,995	$27,100
Health Studies	$49,981	$43,472	$61,072

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENT, SAFETY AND HEALTH

I. Preface: Oversight

The Office of Independent Oversight and Appraisals is the principal focal point for the independent oversight of the effectiveness of the Department of Energy's environment, safety, health, and safeguards and security policies and programs, and their implementation across the Department. Inspections are conducted at the Department of Energy's Headquarters and field sites to evaluate the status of protection afforded worker health and safety, public safety, national security interests, and program operations. The program is designed to maximize the effectiveness of oversight resources in independently evaluating the status of program operations and to provide valuable information for cost-effective decisionmaking by management. Another aspect of the program is to promote continuous improvement in the Department's performance in protecting the environment, public, and workers.

Inspections include Comprehensive Inspections, Short-Notice Reviews, and Special Inspections. Comprehensive Inspections address all pertinent inspection topics as contained in the Department of Energy's Orders and all significant facilities at each site inspected. Short-Notice Reviews reflect the Environment, Safety and Health's Strategic Plan's goals and objectives and provide the Department's senior managers with the operational status of the environment, safety, health, and safeguards and security programs at the Department of Energy's facilities. In doing so, the Department's capability to provide enhanced environment, safety, health, and safeguards and security programs and increased cost effectiveness of these programs is heightened. Special inspections are conducted to meet non-recurring needs and vary in scope. In addition, Oversight develops inspection technologies for the inspection process. To assure that actual system performance achieves the intent of the current Department of Energy policies and to provide a realistic measure of environment, safety, health, and safeguards and security program effectiveness at the inspected site, Independent Oversight and Appraisals utilizes system performance tests and root-cause analyses as appropriate.

II. A. Summary Table: Oversight

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Environment, Safety and Health Evaluations.....	$ 13,689	$ 5,500	$ 6,000	$ 500
Site Representatives.....	0	1,400	1,400	0
Analysis and Planning.....	0	4,850	5,925	1,075
Total, Oversight	$ 13,689	$ 11,750	$ 13,325	$ 1,575

II. B. Laboratory and Facility Funding Table: Oversight

All Other	$ 13,689	$ 11,750	$ 13,325	$ 1,575
Total, Oversight	$ 13,689	$ 11,750	$ 13,325	$ 1,575

The Oversight Office is designated as the sole means of independent oversight of the effectiveness of environment safety, health, and safeguards and security policies and programs within the Department of Energy. The independent oversight process provides information to Departmental management in the field and at Headquarters regarding the effectiveness of policies and programs and their implementation in the field in order to: (1) determine the current status of environmental protection, health, safety, and safeguards and security at Departmental facilities; (2) track trends in management performance of these functions; and (3) identify areas requiring added oversight emphasis. Oversight reports the results of their activities to interested Congressional Committees and Subcommittees as well as the Defense Nuclear Facilities Safety Board. Oversight includes assessments, inspections, reviews, and evaluations addressing program compliance and performance. Oversight must be independent (without programmatic or line management interest or influence, objective, unbiased) to assure that objective, validated information is provided to managers and the public. Internal, independent oversight of the Department's environment, safety, health, and safeguards and security programs is designed to provide management with information about the program's status that is validated and independent of that of line management. Oversight provides useful information that aids line management in addressing problems or using appropriate benchmarks by which to gauge performance within their programs. The purpose of oversight is to determine the status of performance in environment, safety, health, and safeguards and security; compare performance to expectations; and analyze trends to identify areas requiring attention or improvement. To be effective, oversight must be credible and linked to accountability.

Oversight is performed by the Department to ensure that management has a clear picture of the status of environment, safety, health, and safeguards and security relative to expectations, orders, laws, standards, and other requirements; identify trends; and analyze trends to establish needs and priorities, and identify areas requiring attention or improvement. Oversight, as a functional responsibility, is carried out by: (1) inspection assessing, testing, compiling and analyzing data, and reporting on the adequacy and effectiveness of a program relative to a set of specific standards, criteria, and Departmental Orders, directives, policies, and performance, (2) evaluating the current status of programs, policies, trends, and directions, (3) providing information to Departmental upper and line management on current program status, as implemented, or on Departmental or program policy application; and (4) tracking and analyzing corrective actions to verify progress toward improving program performance.

Major objectives to accomplish the Oversight mission include: ensuring that the Oversight Inspection Program remains an independent, technically sound program responsive to the Department of Energy's needs; conducting analyses to determine the effectiveness of the Department's Environment, Safety and Health Safeguards and Security Program and identifying trends in program effectiveness; identifying through inspections exemplary practices and innovative technologies to provide worker health and safety with few resources expended; monitoring the status of inspection findings, management issues, policy issues, and other indicators of program status; professionally certifying all inspectors; maintaining effective communications with all levels of management and oversight both internal and external to the Department; and providing and enhancing the development of a singular independent oversight capability. The oversight vision is to provide the Department with credible, excellent, value-added, independent oversight of the Department's environment, safety, health, and safeguards and security activities.

Performance indicators for an effective independent oversight program that provides value-added analysis while promoting continuous improvement in the Department's performance include client satisfaction, adherence to budget and schedule, value-added/cost-recovery impact on field performance in meeting Departmental goals, proactive initiatives, and organizational preparation for the future.

OUTPUT MEASURES

Provide information for cost-effective decisionmaking by operations office managers.

Promote continuous improvement in the Department's performance through value-added and cost-recovery impact on field performance in meeting

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Overview - ENVIRONMENT, SAFETY AND HEALTH (Cont'd)

Departmental goals.

Provide proactive initiatives and organizational preparation for the future.

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Oversight			
Environment, Safety and Health Evaluations	Under the reorganization of the Office of Environment, Safety and Health, all field appraisals and audit functions are being combined in the Oversight program. These functions were transferred from: (1) Special Projects; (2) Environmental Audit; (3) Performance Assessment; (4) Risk Analysis and Technology; (5) Resident Program; and (6) Occupational Medicine. ($13,689)	ENVIRONMENT, SAFETY AND HEALTH EVALUATIONS 4 COMPREHENSIVE INSPECTIONS ($3,000) Multi-functional, programmatic reviews providing consistent, objective, and coordinated oversight. Comprehensive and multi-disciplines inspections designed to determine the status of environment, safety, and health performance across specific facilities, Operations Office, and Headquarters elements. The inspections will simultaneously evaluate a number of different programs as well as the effectiveness of interactions between these programs; various functional organizations; and levels of management in assuring a high level of environment, safety and health performance. The specific programs or factual areas to be evaluated will be selected on the basis of operational history, facility status and hazards, performance indicators, input from the Office of Environment, Safety and Health site representatives, analysis from the Office of Oversight Analysis and Planning Support. The topical areas may include, but are not limited to, the following: environmental (to ensure compliance with environmental requirements and to reduce areas of existing environmental risk), nuclear safety, industrial safety, radiological protection, transportation safety, aviation safety, dam safety, medical surveillance, construction safety, chemical safety, electrical, seismic, criticality, fire protection, industrial hygiene, explosives safety,	ENVIRONMENT, SAFETY AND HEALTH EVALUATIONS 4 COMPREHENSIVE INSPECTIONS ($3,000) Multi-functional, programmatic reviews providing consistent, objective, and coordinated oversight. Comprehensive and multi-disciplines inspections designed to determine the status of environment, safety, and health performance across specific facilities, Operations Office, and Headquarters elements. The inspections will simultaneously evaluate a number of different programs as well as the effectiveness of interactions between these programs; various functional organizations; and levels of management in assuring a high level of environment, safety and health performance. The specific programs or factual areas to be evaluated will be selected on the basis of operational history, facility status and hazards, performance indicators, input from the Office of Environment, Safety and Health site representatives, analysis from the Office of Oversight Analysis and Planning Support. The topical areas may include, but are not limited to, the following: environmental (to ensure compliance with environmental requirements and to reduce areas of existing environmental risk), nuclear safety, industrial safety, radiological protection, transportation safety, aviation safety, dam safety, medical surveillance, construction safety, chemical safety, electrical, seismic, criticality, fire protection, industrial hygiene, explosives safety

III. Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety and Health Evaluations (Cont'd)		and emergency preparedness. Reports provide site and topic information to the Office of Oversight Analysis and Planning Support, as well as technical assistance and policy groups within the Office of Environment, Safety and Health. 3 SHORT-NOTICE REVIEWS ($1500) Focussed, short-notice reviews of the efficacy of a specific area following an established process of pre-planning, planning, execution, validation, closure, and follow-up. Prepares and presents briefings and reports on these highly focussed topical or programmatic reviews regarding the maintenance, improvement, and general effectiveness of the topical/functional areas reviewed. 2 SPECIAL STUDIES ($1,000) Review of significant environment, safety, and health issues across the complex. The results of these reviews (i.e., electrical safety) provide input to the Assistant Secretary for Environment, Safety and Health, other program oversight and technical assistance, and to the line organizations. Conducts quick-response reviews of potentially serious environment, safety, and health accidents or incidents at the request of the Assistant Secretary for Environment, Safety and Health. ($5,500)	and emergency preparedness. Reports provide site and topic information to the Office of Oversight Analysis and Planning Support, as well as technical assistance and policy groups within the Office of Environment, Safety and Health. 4 SHORT-NOTICE REVIEWS ($2,000) Focussed, short-notice reviews of the efficacy of a specific area following an established process of pre-planning, planning, execution, validation, closure, and follow-up. Prepares and presents briefings and reports on these highly focussed topical or programmatic reviews regarding the maintenance, improvement, and general effectiveness of the topical/functional areas reviewed. 2 SPECIAL STUDIES ($1,000) Review of significant environment, safety, and health issues across the complex. The results of these reviews (i.e., electrical safety) provide input to the Assistant Secretary for Environment, Safety and Health, other program oversight and technical assistance, and to the line organizations. Conducts quick-response reviews of potentially serious environment, safety, and health accidents or incidents at the request of the Assistant Secretary for Environment, Safety and Health. ($6,000)
	$13,689	$5,500	$6,000

III. Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Site Representatives		SITE REPRESENTATIVES TECHNICAL COORDINATORS SUPPORT ACTIVITIES ($800) Provide for the Office of Environment, Safety and Health cognizance and monitoring of environment, safety, health, and safeguards and security policies and programs daily activities and operation at key Department of Energy sites to determine the Department's line management's effectiveness in protecting workers, the public, the environment, and national security interests. The individual site representatives observe and assess Departmental programs at assigned sites through interaction with the Department's line management, walkthroughs (direct surveillance) of facilities, and specific assessments of the Department's line performance. Disseminate information pertaining to the daily operations of the field. TECHNICAL SUPPORT FOR DIRECTOR AND AREA COORDINATORS ($600) Technical and administrative support for development and maintenance of protocols, procedures, standards, and criteria, document formats, and other materials required for program development and maintenance. Technical support in initial compilation and assessment/evaluation and facilitate flow of information from the site representatives on a daily basis. Provide report development, data control and entry, first level site-specific trending of findings, and day-to-day scheduling to optimize the site representatives coverage of field operations. ($1,400)	SITE REPRESENTATIVES TECHNICAL COORDINATORS SUPPORT ACTIVITIES ($800) Provide for the Office of Environment, Safety and Health cognizance and monitoring of environment, safety, health, and safeguards and security policies and programs daily activities and operation at key Department of Energy sites to determine the Department's line management's effectiveness in protecting workers, the public, the environment, and national security interests. The individual site representatives observe and assess Departmental programs at assigned sites through interaction with the Department's line management, walkthroughs (direct surveillance) of facilities, and specific assessments of the Department's line performance. Disseminate information pertaining to the daily operations of the field. TECHNICAL SUPPORT FOR DIRECTOR AND AREA COORDINATORS ($600) Technical and administrative support for development and maintenance of protocols, procedures, standards, and criteria, document formats, and other materials required for program development and maintenance. Technical support in initial compilation and assessment/evaluation and facilitate flow of information from the site representatives on a daily basis. Provide report development, data control and entry, first level site-specific trending of findings, and day-to-day scheduling to optimize the site representatives coverage of field operations. ($1,400)

III. Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Site Representatives (Cont'd)	$0	$1,400	$1,400
Analysis and Planning		ANALYSIS AND PLANNING	ANALYSIS AND PLANNING
		INTEGRATED MULTI-DISCIPLINES METHODS/PROTOCOLS ($500)	INTEGRATED MULTI-DISCIPLINES METHODS/PROTOCOLS ($500)
		Develop Inspector Guides to provide and enhance consistency in the inspection process. These guides assist inspectors in evaluating the effectiveness of environment, safety, health, and safeguards and security programs across the complex.	Develop Inspector Guides to provide and enhance consistency in the inspection process. These guides assist inspectors in evaluating the effectiveness of environment, safety, health, and safeguards and security programs across the complex.
		Applies data obtained during reviews to improve environment, safety, health, and safeguards and security assessments and evaluation methods and technologies.	Applies data obtained during reviews to improve environment, safety, health, and safeguards and security assessments and evaluation methods and technologies.
		TRACKING, TRENDING, AND ANALYSIS ($1,000)	TRACKING, TRENDING, AND ANALYSIS ($1,625)
		Establishes and develops analyses of trends in environment, safety, health, and safeguards and security program effectiveness at all facilities and sites identify a need for technical assistance, policy clarification, or additional reviews.	Analyses trends in environment, safety, health, and safeguards and security program effectiveness at all facilities and sites identify a need for technical assistance, policy clarification, or additional reviews based on actual performance and data gathering.
		Develops lessons learned and performance measures.	Develops lessons learned and performance measures.
		Prepares a report to the Secretary on the status of the environmental protection, worker health and safety, and the effectiveness of the safeguards and security policies and programs across the Department's complex.	Prepares a report to the Secretary on the status of the environmental protection, worker health and safety, and the effectiveness of the safeguards and security policies and programs across the Department's complex.
		Monitors environment, safety, health, and safeguards and security performance	Monitors environment, safety, health, and safeguards and security performance

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III. Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analysis and Planning (Cont'd)		indicators and occurrence reporting systems in order to identify a need for Oversight action. Collects and integrates information from oversight reviews, assessments, evaluations, and inspections. Performs analysis, including trending and noteworthy practice identification,k of the integrated information from oversight activities and other relevant sources. Collected information provides quantifiable data supporting the status determinations, analysis is conducted on a continuing basis to identify policy and implementation trends and to assess the cost-effectiveness of program implementation. Principal liaison with other Departmental elements (internal - Office of Environment, Safety and Health, program offices, sites, and facilities), contractors, and external oversight agencies and organizations (i.e., states and local municipalities, Congress). Performs self-assessments of all oversight functions.	indicators and occurrence reporting systems in order to identify a need for Oversight action. Collects and integrates information from oversight reviews, assessments, evaluations, and inspections. Performs analysis, including trending and noteworthy practice identification, of the integrated information from oversight activities and other relevant sources. Collected information provides quantifiable data supporting the status determinations. Analysis is conducted on a continuing basis to identify policy and implementation trends and to assess the cost-effectiveness of program implementation. Principal liaison with other Departmental elements (internal - Office of Environment, safety and Health, program offices, sites, and facilities), contractors, and external oversight agencies and organizations (i.e., states and local municipalities, Congress). Performs self-assessments of all oversight functions.
		SCHEDULING PLAN/PROCEDURES ($350) Develops and coordinates the planning and scheduling of all oversight activities and the tracking of commitment and follow-up activities. Maintains and updates a master assessment schedule that addresses all requirements. Works with the Office of Planning and Administration in the strategic planning process.	SCHEDULING PLAN/PROCEDURES ($300) Coordinates the planning and scheduling of all oversight activities and the tracking of commitment and follow-up activities. Maintains and updates a master assessment schedule that addresses all requirements. Works with the Office of Planning and Administration in the strategic planning process. Development and implementation of the

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III. Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analysis and Planning (Cont'd)		Development and implementation of the policy, standards, and oversight protocols for environment, safety, health, and safeguards and security oversight activities to ensure the quality and consistency of the oversight process. METHODS, GUIDES, TOOLS, PROTOCOLS ($2,000) Develop tools that provide direct support to the inspection process. Develop methods to improve the field inspection process. These methods and tools will be used for two purposes: (1) to increase effectiveness of topic team inspection activities by focussing topic team efforts on the most critical areas through enhanced inspection planning and (2) to guide the inspection team to direct and/or conduct additional data gathering activities such as independent scenario development, and integrated performance testing. CERTIFICATION POLICIES AND PROCEDURES ($1,000) Develops the oversight certification programs. Consolidates information and record-keeping of personnel performing oversight activities. Reviews ongoing training program and initiatives within the Department for applicability to enhance the oversight certification programs and promote technical excellence in the oversight process. Coordinates with other oversight offices to achieve and maintain appropriate number of trained and certified individuals. ($4,850)	policy, standards, and oversight protocols for environment, safety, health, and safeguards and security oversight activities to ensure the quality and consistency of the oversight process. METHODS, GUIDES, TOOLS, PROTOCOLS ($2,000) Develop tools that provide direct support to the inspection process. Develop methods to improve the field inspection process. These methods and tools will be used for two purposes: (1) to increase effectiveness of topic team inspection activities by focussing topic team efforts on the most critical areas through enhanced inspection planning and (2) to guide the inspection team to direct and/or conduct additional data gathering activities such as independent scenario development, and integrated performance testing. CERTIFICATION POLICIES AND PROCEDURES ($1,500) Develops the oversight certification programs. Certifies inspectorate. Consolidates information and record-keeping of personnel performing oversight activities. Reviews ongoing training program and initiatives within the Department for applicability to enhance the oversight certification programs and promote technical excellence in the oversight process. Coordinates with other oversight offices to achieve and maintain appropriate number of trained and certified individuals. ($5,925)

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III. Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analysis and Planning (Cont'd)	$0	$4,850	$5,925
Oversight	$13,689	$11,750	$13,325

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENT, SAFETY AND HEALTH

I. Preface: Planning & Administration

The Deputy Assistant Secretary for Planning and Administration provides the leadership necessary for, and the centralized management and direction of the Office of Environment, Safety and Health planning, budgeting, financial, and program execution processes; to ensure that these processes are effective, and fully integrated and consistent with the Department-wide processes and requirements; to provide administrative support to the Office of Environment, Safety and Health policy development, oversight, and technical assistance programs; to provide Department-wide guidance on the incorporation of cross-cutting environment, safety, health, safeguards, and security considerations into all Department activities; and to represent the Assistant Secretary for Environment, Safety and Health on advisory and other committees.

The Deputy Assistant Secretary for Planning and Administration is the focal point for, and has primary responsibility for achieving the Information Management and Communication, and the Environment, Safety and Health budget and Planning Process goals set forth in the Office of Environment, Safety and Health Strategic Plan; for implementing the Department's technical excellence policy as it relates to training and qualification programs relating to environment, safety, and health. The Deputy Assistant Secretary for Planning and Administration is the focal point for, and has primary responsibility within the Office of Environment, Safety and Health for supporting the achievement of three Department Critical success Factors: Management Practices, Human Resources, and Industrial Competitiveness.

The Deputy Assistant Secretary is responsible for providing financial and administrative assistance to the Assistant Secretary for Environment, Safety and Health including the preparation and execution of the Office of Environment, Safety and Health budget; funds control and accounting activities; logistics support, including automated data processing; and all personnel support activities including employee development and training, executive succession, and affirmative action.

These functions are accomplished through the Offices of Budget and Administration, Information Management, Business Performance Systems, and Technical Training/Professional Development. Specific functions are described as follows:

The Office of Budget and Administration provides financial and administrative assistance to the Assistant Secretary for Environment, Safety and Health, including the preparation and execution of the Office of Environment, Safety and Health budget, funds control and accounting activities, preparation of management studies, and provision of management support services.

The Office of Business Performance Systems provides management and technical assistance which crosscuts all Department of Energy Cognizant Secretarial Officers; Operations Offices; Management and Operating Contractors; and the Chief financial Officer in the areas of environment, safety and health program planning, budgeting, and budget execution. the principal focus of these efforts is to enhance the quality and cost-effectiveness of environment, safety and health program performance of the operating organizations. This is accomplished by leading Department-wide development and implementation of business and budget planning processes for environment, safety and health risk management. The Environment, Safety and health Management Plan (formerly referred to as the Safety and Health Five-Year Plan) is the primary process which enables consistent identification of needed departmental environment, safety and health activities; risk-based priority setting; effective budget decisionmaking and allocation of environment, safety and health resources; and improved accountability for environment, safety and health performance. The other key focus area for the Office of Business Performance Systems is assuring new contracts and renegotiated existing contracts implement environment, safety and health portions of the departmental Contract Reform Initiatives. Major program emphasis is focused on procurements and contractor selection processes, definition of environment, safety and health incentives, development of environment, safety and health performance measures, and working with the Operations Offices in the development of site-specific environment, safety and health performance measures. Fostering the integration of Environment, Safety and health into all Department business functions, the establishment of accountability mechanisms, and results- oriented/performance-based contracting processes is essential for the successful achievement of the

I. Planning & Administration (Cont'd)

Department's key missions. (Includes activities previously funded under Program Evaluation: Safety and Health Five Year Plan, and OSH Program/Budget Evaluation.)

The Office of Technical Training/Professional Development provides the leadership necessary to ensure that human resources of the Department and its contractor family, have sufficient training and are technically qualified to carry out the Department's environment, safety, and health mission in an efficient and effective manner. This is accomplished by establishing, managing, and continuously improving a comprehensive Office of Environment, Safety and health technical training and professional development program; and by developing and managing a process for certifying the quality and adequacy of environment, safety, and health training throughout the Department.

Capital equipment is required for programs conducted by Environment, Safety and health. Capital equipment funds will provide computer equipment in support of Information Resources Management requirements to facilitate access to, and use of all data and information resources necessary for planning, decisionmaking, and successful conduct of the programs and activities of the Office of Environment, Safety and Health.

II. A. Summary Table: Planning & Administration

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Business Performance Systems	$ 2,900	$ 3,000	$ 5,000	$ 2,000
Program Direction	25,359	27,817	32,067	4,250
Capital Equipment	1,563	1,500	1,500	0
Total, Planning & Administration	$ 29,822	$ 32,317	$ 38,567	$ 6,250

II. B. Laboratory and Facility Funding Table: Planning & Administration

All Other	$ 29,822	$ 32,317	$ 38,567	$ 6,250
Total, Planning & Administration	$ 29,822	$ 32,317	$ 38,567	$ 6,250

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Planning & Administration			
Business Performance Systems	Activities included within this program are the Environment, Safety and Health (ES&H) budget and planning process, and ES&H Business Performance: The Environment, Safety and Health Management Planning process (formerly known as the Safety and Health Five-Year Plan) allows DOE managers to determine scope, priorities, cost, and time to execute ES&H activities needed to prevent accidents and manage immediate risks; to develop integrated ES&H programs; achieve compliance with applicable laws, regulations, agreements and DOE Orders; or move toward excellence. ES&H activities are used by the line programs to formulate their annual Environment, Safety and Health budgets and produce narrative Management Plans. These plans form the basis for a consolidated Department of Energy Environment, Safety and Health Management Plan. Produces ES&H Crosscut Report; the A-106 report; and Waste Minimization/Pollution Prevention Crosscut Plan. FY 1994 Program activities will result in successful completion of the FY 1996-2000 Environment, Safety and health Budget and Management Plan. Conduct analysis of line program Environment, Safety and Health budgets submitted for Secretarial review and approval; monitoring how these budgets and resources are actually being applied to meet priority ES&H needs and commitments at various sites. Conduct an in-depth analysis of major risks, funding profiles, and site/facility plans to assure Secretarial ES&H issues are being addressed and site plans are consistent with the DOE strategic plan	Continue FY 1994 program. Major FY 1995 program emphasis will be to implement Environment, Safety and Health budget execution systems to enhance line management's ability to track ES&H program execution, milestones, and improve accountability for ES&H program execution, milestones, and improve accountability for ES&H performance. Provide technical assistance to operating levels of the Department. Continue the analysis of proposed line program environment, safety and health budgets submitted for Secretarial review and approval; monitor how budgets and resources are actually being applied to meet priority ES&H needs and commitments. Program activities will result in successful completion of the FY 1997-2001 Environment, Safety and Health Budget and Management Plan. Continue the FY 1994 program in support of the Department's Contract Reform Initiatives. The major focus of the FY 1995 program is to ensure suitable environment, safety and health provisions are developed, negotiated and included within major new contracts and renegotiated contracts executed this fiscal year. Specific recommendations on environment, safety and health clauses, contractor selection criteria, performance expectations, and incentives will be made. In addition, assistance will be provided in the development of site-specific environment, safety and health performance measures, based on the Departmental template. ($3,000)	Continue FY 1995 initiatives. Major FY 1996 emphasis will be complete implementation of Environment, Safety and Health budget execution systems initiated in Fy 1995. Provide technical assistance to operating levels of the Department with an objective to increase the number of line organizations implementing the process on their own in FY 1996. Continue analysis of proposed line program environment, safety and health budgets submitted for Secretarial review and approval; monitor how budgets and resources are actually being applied to meet priority environment, safety and health needs and commitments; and support development of performance based environment, safety and health programs and budgets at various sites. FY 1996 Program activities will result in the successful completion of the FY 1998-2002 Environment, Safety and Health Budget and Management Plan. Continue environment, safety and health Contract Reform Initiatives. The major focus of the FY 1996 program is to continue to ensure suitable environment, safety and health provisions are developed, negotiated and included in new contracts and renegotiated contracts executed this fiscal year. This is anticipated to involve up to nine DOE sites for the evaluation of the contract solicitations. ($5,000)

III. Planning & Administration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Business Performance Systems (Cont'd)	and Contract Reform Initiatives. A major focus is to ensure procurement and contractor selection processes communicate ES&H qualifications, experience and performance expectations to prospective bidders, incorporate ES&H into contract clauses with specific performance measures and metrics based on established DOE-wide performance objectives and criteria. Define scope.content of good comprehensive ES&H programs. Support the development/implementation of incentives for good ES&H programs in competition and contract performance. ($2,900)		
	$2,900	$3,000	$5,000
Program Direction	Provide funds for staff of 279 FTEs, associated travel and transit subsidy. Continued contractual support and workstation maintenance support for Environment, Safety and Health staff. Provide support to and oversight of environment, safety and health planning activities. Completed the installation of the LAN. Provided training for users. Provided on-going engineering support. ($25,359)	Provide funds for staff of 341 FTEs, associated travel and employee transit subsidy. Provide for employee development training program. Continue contractual support and workstation maintenance support for Environment, Safety and health staff. Provide support to and oversight of environment, safety and health planning activities. ($27,817)	Provide funds for staff of 345 FTEs, associated travel and employee transit subsidy. Provide for employee development training program. Continue contractual support and workstation maintenance support for Environment, Safety and Health staff. Increase support and oversight of environment, safety and health planning activities. ($32,067)
	280.0 FTE $25,359	343.0 FTE $27,817	347.0 FTE $32,067

III. Planning & Administration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Initiate upgrade of DOELAP database and computer capabilities and related equipment. Upgrade includes computer hardware, database management software, upgrades of x-ray equipment, and purchase of radiation detectors. Purchase new gamma beam irradiator and linear positioning system. Purchase additional torso phantoms. Equipment will be needed for implementation of two major information systems efforts for the support of the CEDR and HSS programs. Acquisitions will include database and file servers, data entry systems, data management software scientific workstations with large floating point capacity, and network access equipment. The ADP equipment for the pilot medical surveillance program has unique requirements in that it must support the data needs of the entire surveillance system, have network communications capabilities, analytic abilities for large relational data bases and all the sites and components of the system must be compatible. Currently a medial data base of this size, complexity and specificity does not exist in occupational medicine. Purchase will include: data servers, file servers, data entry systems, work stations, interfaces for laboratory equipment, modems, printers appropriate software, and network access equipment. Continue equipment upgrades. Continue required maintenance support. Continue purchase of network equipment. ($1,563)	Continue upgrade of DOELAP computer capabilities. Purchase In- Vivo counting vault in support of the bioassay accreditation program. Purchase replacement Am-241 irradiator for existing DOELAP irradiations. Purchase of various equipment to support ongoing R&D efforts to include oscilloscopes, a spectrometer, and sonic sieves. Upgrade equipment for the CEDR and EHS programs. Will provide for increased network capability and efficiencies. Provide upgrades to medical data system network as more users come on line. Provide for equipment upgrades and replacement. Provide for increased capacity and efficiencies as more uses are brought on-line. ($1,500)	Continue upgrades of DOELAP computer capabilities. Purchase equipment to support ongoing R&D efforts. Upgrade equipment for the CEDR and EHS programs. Continue upgrades to medical data system. Continue upgrades to office automation equipment. ($1,500)
	$1,563	$1,500	$1,500

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III. Planning & Administration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Planning & Administration	280.0 FTE $29,822	343.0 FTE $32,317	347.0 FTE $38,567

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Nuclear Safety Policy

The Nuclear Safety Policy activity includes the staff and funding required for the development, maintenance, and interpretation of enhanced departmental nuclear safety requirements and standards (policy, rules, and Orders) to assure safe operation of DOE nuclear reactor and non-reactor nuclear facilities.

The Fiscal Year 1996 goals of the Office of Nuclear Safety and Standards include:

- o Issue eight (8) final Phase II nuclear safety management rules.
- o Complete development and issuance of interim DOE Orders for nuclear safety.
- o Maintain Department-wide programs for technical standards, occurrence reporting (ORPS), and performance indicator trending.
- o Continue training support for DOE contractor facility personnel, for development of performance-based training methodology, and for accreditation.
- o Continue to develop, interpret, and maintain nuclear safety requirements through rulemaking, DOE Orders, guidance documents, and standards.
- o Support implementation of rules through guidance and certification of Department and contractor personnel.
- o Continue membership in INPO (Institute of Nuclear Power Operations).

II. A. Summary Table: Nuclear Safety Policy

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 2,800	$ 3,000	$ 3,000	$ 0
Benefits	500	550	550	0
Travel	200	250	250	0
Other Expenses	11,500	13,380	13,380	0
Total, Nuclear Safety Policy	$ 15,000	$ 17,180	$ 17,180	$ 0

II. B. Laboratory and Facility Funding Table: Nuclear Safety Policy

II. B. Laboratory and Facility Funding Table: Nuclear Safety Policy

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	$ 15,000	$ 17,180	$ 17,180	$ 0
Total, Nuclear Safety Policy	$ 15,000	$ 17,180	$ 17,180	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Safety Policy			
Personnel Compensation	This activity includes salaries and awards for the Office of Nuclear Safety Policy assigned to the Assistant Secretary for Environment, Safety and Health. ($2,800)	This activity includes salaries and awards for the Office of Nuclear Safety Policy assigned to the Assistant Secretary for Environment, Safety and Health. ($3,000)	This activity includes salaries and awards for the Office of Nuclear Safety Policy assigned to the Assistant Secretary for Environment, Safety and Health. ($3,000)
	35.0 FTE $2,800	35.0 FTE $3,000	35.0 FTE $3,000
Benefits	This activity includes Civil Service Retirement System (CSRS) employees' personnel benefits and Federal Employee Retirement System (FERS) employees' personnel benefits. ($500)	This activity includes Civil Service Retirement System (CSRS) employees' personnel benefits and Federal Employee Retirement System (FERS) employees' personnel benefits. ($550)	This activity includes Civil Service Retirement System (CSRS) employees' personnel benefits and Federal Employee Retirement System (FERS) employees' personnel benefits. ($550)
	$500	$550	$550
Travel	This activity includes funds for official business travel, invitational travel, and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters, and other allowable relocation expenses. ($200)	This activity includes funds for official business travel, invitational travel, and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters, and other allowable relocation expenses. ($250)	This activity includes funds for official business travel, invitational travel, and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters, and other allowable relocation expenses. ($250)

III. Nuclear Safety Policy (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Travel (Cont'd)	$200	$250	$250
Other Expenses	This activity includes funds for: (1) developing, interpreting, maintaining, and providing technical assistance of the enhanced nuclear safety standards (policy, rules, Orders, and technical standards) to assure safe operation of DOE nuclear reactor and non-reactor nuclear facilities; (2) instituting and maintaining Department-wide occurrence reporting; (3) managing the Department-wide standards program; and (4) operating and maintaining the Department-wide performance indicator program. ($11,500)	This activity includes funds for: (1) developing, interpreting, maintaining, and providing technical assistance of the enhanced nuclear safety standards (policy, rules, Orders, and technical standards) to assure safe operation of DOE nuclear reactor and non-reactor nuclear facilities; (2) instituting and maintaining Department-wide occurrence reporting; (3) managing the Department-wide standards program; (4) operating and maintaining the Department-wide performance indicator program; and (5) supporting implementation of new rules and directives through training of Department and contractor personnel on revised nuclear safety requirements. ($13,380)	This activity includes funds for: (1) developing, interpreting, maintaining, and providing technical assistance of the enhanced nuclear safety standards (policy, rules, Orders, and technical standards) to assure safe operation of DOE nuclear reactor and non-reactor nuclear facilities; (2) instituting and maintaining Department-wide occurrence reporting; (3) managing the Department-wide standards program; (4) operating and maintaining the Department-wide performance indicator program; (5) supporting implementation of new rules and directives through training of Department and contractor personnel on revised nuclear safety requirements; and (6) membership in INPO and use of INPO data. ($13,380)
	$11,500	$13,380	$13,380
Nuclear Safety Policy	35.0 FTE $15,000	35.0 FTE $17,180	35.0 FTE $17,180

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
(dollars in thousands)

01/26/95

Current Structure	FY 1994	Revised Structure					
		Envir.	Worker Health & Safety				
			Safety & Health Policy	Worker Safety Haz Mgmt.	Field Support	Info. Mgmt.	Total
Energy Supply Research & Development	155,758	16,760	10,705	12,960	4,687	2,500	30,852
Environment, Safety and Health Program	141,104	16,760	10,705	12,960	4,687	2,500	30,852
Special Projects	5,560	=	=	=	=	=	=
Environment	19,690	16,760	=	=	=	=	=
Safety and Quality Assurance	30,789	=	10,705	=	4,687	2,500	17,892
Performance Assessment	5,640	–	–	–	3,246	–	3,246
Occupational Safety	13,205	–	10,705	–	–	2,500	13,205
Risk Analysis & Technology	7,544	–		–	1,441	–	1,441
Program Evaluation	2,900	–	–	–	–	–	–
Resident Program	1,500	–	–	–	–	–	–
Health	63,891	=	=	12,960	=	=	12,960
Occupational Medicine	2,040	–	–	–	–	–	–
Epi. & Health Surveillance 1/	48,891	–	–	–	–	–	–
Health Physics & Industrial Hygiene	12,960	–	–	12,960	–	–	12,960
Planning & Administration	21,174	=	=	=	=	=	=
Program Direction 2/	19,611	–	–	–	–	–	–
Capital Equipment 3/	1,563	–	–	–	–	–	–
Nuclear Safety Policy	14,654	=	=	=	=	=	=
Defense Envir. & Waste Management	9,950	=	=	=	=	=	=
Dose Reconstruction	9,950	–	–	–	–	–	=
Other Defense Activities	39,664	=	=	=	=	=	=
Security Evaluations	14,961	–	–	–	–	–	=
Nuclear Safety Oversight	24,903	–	–	–	–	–	=
Weapons Activities	10,250	=	=	=	=	=	=
Dose Reconstruction	3,150	–	–	–	–	–	=
Marshall Islands	6,500	–	–	–	–	–	=
DNFSB	600	–	–	–	–	–	=
Total EH	215,822	16,760	10,705	12,960	4,687	2,500	30,852

1/ Includes reduction of $261,000 for SBIR
2/ Includes $3,302,000 Recision
3/ Includes $37,000 Recision

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
(dollars in thousands)

01/26/95

Current Structure	FY 1994	Revised Structure Health Studies			
		Occup. Medicine	Epi. Studies	Internati Health Studies	Total
Energy Supply Research & Development	155,758	1,090	26,574	22,317	49,981
Environment, Safety and Health Program	141,104	1,090	26,574	22,317	49,981
Special Projects	5,580	--	--	--	--
Environment	19,690	--	--	--	--
Safety and Quality Assurance	30,789	--	--	--	--
Performance Assessment	5,640	--	--	--	--
Occupational Safety	13,205	--	--	--	--
Risk Analysis & Technology	7,544	--	--	--	--
Program Evaluation	2,900	--	--	--	--
Resident Program	1,500	--	--	--	--
Health	63,891	1,090	26,574	22,317	49,981
Occupational Medicine	2,040	1,090	--	--	1,090
Epi. & Health Surveillance 1/	48,891	--	26,574	22,317	48,891
Health Physics & Industrial Hygiene	12,960	--	--	--	--
Planning & Administration	21,174	--	--	--	--
Program Direction 2/	19,611	--	--	--	--
Capital Equipment 3/	1,563	--	--	--	--
Nuclear Safety Policy	14,654	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--
Other Defense Activities	39,864	--	--	--	--
Security Evaluations	14,961	--	--	--	--
Nuclear Safety Oversight	24,903	--	--	--	--
Weapons Activities	10,250	--	--	--	--
Dose Reconstruction	3,150	--	--	--	--
Marshall Islands	6,500	--	--	--	--
DNFSB	600	--	--	--	--
Total EH	215,822	1,090	26,574	22,317	49,981

1/ Includes reduction of $261,000 for SBIR
2/ Includes $3,302,000 Recision
3/ Includes $37,000 Recision

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
(dollars in thousands)

01/26/95

Current Structure	FY 1994	Revised Structure						
		Oversight						
		ES&H Eval.	Site Reps	Analysis & Planning				Total
Energy Supply Research & Development	155,758	13,689	=	=	=	=	=	13,689
Environment, Safety and Health Program	141,104	13,689	=	=	=	=	=	13,689
Special Projects	5,560	5,560	=	=	=	=	=	5,560
Environment	19,690	2,930	=	=	=	=	=	2,930
Safety and Quality Assurance	30,789	4,249	=	=	=	=	=	4,249
Performance Assessment	5,640	2,394	–	–	–	–	–	2,394
Occupational Safety	13,205	–	–	–	–	–	–	–
Risk Analysis & Techology	7,544	355	–	–	–	–	–	355
Program Evaluation	2,900	–	–	–	–	–	–	–
Resident Program	1,500	1,500	–	–	–	–	–	1,500
Health	63,891	950	=	=	=	=	=	950
Occupational Medicine	2,040	950	–	–	–	–	–	950
Epi. & Health Surveillance 1/	48,891	–	–	–	–	–	–	–
Health Physics & Industrial Hygiene	12,960	–	–	–	–	–	–	–
Planning & Administration	21,174	=	=	=	=	=	=	=
Program Direction 2/	19,611	–	–	–	–	–	–	–
Capital Equipment 3/	1,563	–	–	–	–	–	–	–
Nuclear Safety Policy	14,654	=	=	=	=	=	=	=
Defense Envir. & Waste Management	9,950	=	=	=	=	=	=	=
Dose Reconstruction	9,950	–	–	–	–	–	–	–
Other Defense Activities	39,864	=	=	=	=	=	=	=
Security Evaluations	14,961	–	–	–	–	–	–	–
Nuclear Safety Oversight	24,903	–	–	–	–	–	–	–
Weapons Activities	10,250	=	=	=	=	=	=	=
Dose Reconstruction	3,150	–	–	–	–	–	–	–
Marshall Islands	6,500	–	–	–	–	–	–	–
DNFSB	600	–	=	=	=	=	=	–
Total EH	215,822	13,689	–	–	–	–	–	13,689

1/ Includes reduction of $261,000 for SBIR
2/ Includes $3,302,000 Recision
3/ Includes $37,000 Recision

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
(dollars in thousands)

01/26/95

Current Structure	FY 1994	Revised Structure: Planning & Administration			
		Business Perf. Systems	Program Direction	Capital Equip.	Total
Energy Supply Research & Development	155,758	2,900	25,359	1,563	29,822
Environment, Safety and Health Program	141,104	2,900	25,359	1,563	29,822
Special Projects	5,580	=	=	=	=
Environment	19,690	=	=	=	=
Safety and Quality Assurance	30,789	2,900	5,748	=	8,648
Performance Assessment	5,640	–	–	–	–
Occupational Safety	13,205	–	–	–	–
Risk Analysis & Technology	7,544	–	5,748	–	5,748
Program Evaluation	2,900	2,900	–	–	2,900
Resident Program	1,500	–	–	–	–
Health	63,891	=	=	=	=
Occupational Medicine	2,040	–	–	–	–
Epi. & Health Surveillance 1/	48,891	–	–	–	–
Health Physics & Industrial Hygiene	12,960	–	–	–	–
Planning & Administration	21,174	=	19,611	1,563	21,174
Program Direction 2/	19,611	–	19,611	–	19,611
Capital Equipment 3/	1,563	–	–	1,563	1,563
Nuclear Safety Policy	14,654	=	=	=	=
Defense Envir. & Waste Management	9,950	=	=	=	=
Dose Reconstruction	9,950	–	–	–	–
Other Defense Activities	39,864	=	=	=	=
Security Evaluations	14,961	–	–	–	–
Nuclear Safety Oversight	24,903	–	–	–	–
Weapons Activities	10,250	=	=	=	=
Dose Reconstruction	3,150	–	–	–	–
Marshall Islands	6,500	–	–	–	–
DNFSB	600	–	–	–	–
Total EH	215,822	2,900	25,359	1,563	29,822

1/ Includes reduction of $261,000 for SBIR
2/ Includes $3,302,000 Recision
3/ Includes $37,000 Recision

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
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FY 1994					
Current Structure		Revised Structure			
		Nuclear Safety Policy	Defense Dose Recon	Security Eval	Nuclear Safety Oversight
Energy Supply Research & Development	155,758	14,654	--	--	--
Environment, Safety and Health Program	141,104	--	--	--	--
Special Projects	5,560	--	--	--	--
Environment	19,690	--	--	--	--
Safety and Quality Assurance	30,789	--	--	--	--
Performance Assessment	5,640	--	--	--	--
Occupational Safety	13,205	--	--	--	--
Risk Analysis & Technology	7,544	--	--	--	--
Program Evaluation	2,900	--	--	--	--
Resident Program	1,500	--	--	--	--
Health	63,891	--	--	--	--
Occupational Medicine	2,040	--	--	--	--
Epi. & Health Surveillance 1/	48,891	--	--	--	--
Health Physics & Industrial Hygiene	12,960	--	--	--	--
Planning & Administration	21,174	--	--	--	--
Program Direction 2/	19,611	--	--	--	--
Capital Equipment 3/	1,563	--	--	--	--
Nuclear Safety Policy	14,654	14,654	--	--	--
Defense Envir. & Waste Management	9,950	--	9,950	--	--
Dose Reconstruction	9,950	--	9,950	--	--
Other Defense Activities	39,864	--	--	14,961	24,903
Security Evaluations	14,961	--	--	14,961	--
Nuclear Safety Oversight	24,903	--	--	--	24,903
Weapons Activities	10,250	--	--	--	--
Dose Reconstruction	3,150	--	--	--	--
Marshall Islands	6,500	--	--	--	--
DNFSB	600	--	--	--	--
Total EH	215,822	14,654	9,950	14,961	24,903

1/ Includes reduction of $261,000 for SBIR
2/ Includes $3,302,000 Recision
3/ Includes $37,000 Recision

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Current Structure	FY 1994	Revised Structure			
		Weapons Dose Recon	Marshall Islands	DNFSB	Total EH
Energy Supply Research & Development	155,758	--	--	--	155,758
Environment, Safety and Health Program	141,104	--	--	--	141,104
Special Projects	5,560	--	--	--	5,560
Environment	19,690	--	--	--	19,690
Safety and Quality Assurance	30,789	--	--	--	30,789
Performance Assessment	5,640	--	--	--	5,640
Occupational Safety	13,205	--	--	--	13,205
Risk Analysis & Technology	7,544	--	--	--	7,544
Program Evaluation	2,900	--	--	--	2,900
Resident Program	1,500	--	--	--	1,500
Health	63,891	--	--	--	63,891
Occupational Medicine	2,040	--	--	--	2,040
Epi. & Health Surveillance 1/	48,891	--	--	--	48,891
Health Physics & Industrial Hygiene	12,960	--	--	--	12,960
Planning & Administration	21,174	--	--	--	21,174
Program Direction 2/	19,611	--	--	--	19,611
Capital Equipment 3/	1,563	--	--	--	1,563
Nuclear Safety Policy	14,654	--	--	--	14,654
Defense Envir. & Waste Management	9,950	--	--	--	9,950
Dose Reconstruction	9,950	--	--	--	9,950
Other Defense Activities	39,864	--	--	--	39,864
Security Evaluations	14,961	--	--	--	14,961
Nuclear Safety Oversight	24,903	--	--	--	24,903
Weapons Activities	10,250	3,150	6,500	600	10,250
Dose Reconstruction	3,150	3,150	--	--	3,150
Marshall Islands	6,500	--	6,500	--	6,500
DNFSB	600	--	--	600	600
Total EH	215,822	3,150	6,500	600	215,822

1/ Includes reduction of $261,000 for SBIR
2/ Includes $3,302,000 Recision
3/ Includes $37,000 Recision

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Current Structure	FY 1995	Revised Structure					
		Envir.	Worker Health & Safety				
			Safety & Health Policy	Worker Safety Haz Mgmt.	Field Support	Info. Mgmt.	Total
Energy Supply Research & Development	143,920	14,190	7,906	10,700	2,905	3,500	25,011
Environment, Safety and Health Program	126,740	14,190	7,906	10,700	2,905	3,500	25,011
Special Projects	4,760	--	--	--	--	--	--
Environment	16,860	14,190	--	--	--	--	--
Safety and Quality Assurance	26,349	--	7,906	--	2,905	3,500	14,311
Performance Assessment	3,204	--	--	--	970	--	970
Occupational Safety	11,406	--	7,906	--	--	3,500	11,406
Risk Analysis & Technology	8,106	--		--	1,935	--	1,935
Program Evaluation	3,000	--	--	--	--	--	--
Resident Program	633	--	--	--	--	--	--
Health	54,912	--	--	10,700	--	--	10,700
Occupational Medicine	4,390	--	--	--	--	--	--
Epi. & Health Surveillance	39,822	--	--	--	--	--	--
Health Physics & Industrial Hygiene	10,700	--	--	10,700	--	--	10,700
Planning & Administration	23,859	--	--	--	--	--	--
Program Direction	22,359	--	--	--	--	--	--
Capital Equipment	1,500	--	--	--	--	--	--
Nuclear Safety Policy	17,180	--	--	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--	--	--
Other Defense Activities	29,859	--	--	--	--	--	--
Security Evaluations	13,180	--	--	--	--	--	--
Nuclear Safety Oversight	16,679	--	--	--	--	--	--
Weapons Activities	10,239	--	--	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--	--	--
Marshall Islands	6,800	--	--	--	--	--	--
DNFSB	551	--	--	--	--	--	--
Total EH	193,968	14,190	7,906	10,700	2,905	3,500	25,011

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Environment, Safety and Health
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Current Structure	FY 1995	Revised Structure			
		Health Studies			
		Occup. Medicine	Epi. Studies	Internati Health Studies	Total
Energy Supply Research & Development	143,920	3,650	17,827	21,995	43,472
Environment, Safety and Health Program	126,740	3,650	17,827	21,995	43,472
Special Projects	4,780	--	--	--	--
Environment	16,880	--	--	--	--
Safety and Quality Assurance	26,349	--	--	--	--
Performance Assessment	3,204	--	--	--	--
Occupational Safety	11,406	--	--	--	--
Risk Analysis & Technology	8,106	--	--	--	--
Program Evaluation	3,000	--	--	--	--
Resident Program	633	--	--	--	--
Health	54,912	3,650	17,827	21,995	43,472
Occupational Medicine	4,390	3,650	--	--	3,650
Epi. & Health Surveillance	39,822	--	17,827	21,995	39,822
Health Physics & Industrial Hygiene	10,700	--	--	--	--
Planning & Administration	23,859	--	--	--	--
Program Direction	22,359	--	--	--	--
Capital Equipment	1,500	--	--	--	--
Nuclear Safety Policy	17,180	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--
Other Defense Activities	29,859	--	--	--	--
Security Evaluations	13,180	--	--	--	--
Nuclear Safety Oversight	16,679	--	--	--	--
Weapons Activities	10,239	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--
Marshall Islands	6,800	--	--	--	--
DNFSB	551	--	--	--	--
Total EH	193,968	3,650	17,827	21,995	43,472

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Current Structure	FY 1995	Revised Structure						
		Oversight						
		ES&H Eval.	Site Reps.	Analysis & Planning				Total
Energy Supply Research & Development	143,920	5,500	1,400	4,850	--	--	--	11,750
Environment, Safety and Health Program	126,740	5,500	1,400	4,850	--	--	--	11,750
Special Projects	4,760	4,760	--	--	--	--	--	4,760
Environment	16,860	--	--	2,670	--	--	--	2,670
Safety and Quality Assurance	26,349	740	660	2,180	--	--	--	3,580
Performance Assessment	3,204	385	27	1,822	--	--	--	2,234
Occupational Safety	11,406	--	--	--	--	--	--	--
Risk Analysis & Technology	8,106	355	--	358	--	--	--	713
Program Evaluation	3,000	--	--	--	--	--	--	--
Resident Program	633	--	633	--	--	--	--	633
Health	54,912	--	740	--	--	--	--	740
Occupational Medicine	4,390	--	740	--	--	--	--	740
Epi. & Health Surveillance	39,822	--	--	--	--	--	--	--
Health Physics & Industrial Hygiene	10,700	--	--	--	--	--	--	--
Planning & Administration	23,859	--	--	--	--	--	--	--
Program Direction	22,359	--	--	--	--	--	--	--
Capital Equipment	1,500	--	--	--	--	--	--	--
Nuclear Safety Policy	17,180	--	--	--	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--	--	--	--
Other Defense Activities	29,859	--	--	--	--	--	--	--
Security Evaluations	13,180	--	--	--	--	--	--	--
Nuclear Safety Oversight	16,679	--	--	--	--	--	--	--
Weapons Activities	10,239	--	--	--	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--	--	--	--
Marshall Islands	6,800	--	--	--	--	--	--	--
DNFSB	551	--	--	--	--	--	--	--
Total EH	193,968	5,500	1,400	4,850	--	--	--	11,750

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FY 1995					
Current Structure		Revised Structure			
		Planning & Administration			
		Business Perf. Systems	Program Direction	Capital Equip.	Total
Energy Supply Research & Development	143,920	3,000	27,817	1,500	32,317
Environment, Safety and Health Program	126,740	3,000	27,817	1,500	32,317
Special Projects	4,760	--	--	--	--
Environment	16,860	--	--	--	--
Safety and Quality Assurance	26,349	3,000	5,458	--	8,458
Performance Assessment	3,204	--	--	--	--
Occupational Safety	11,406	--	--	--	--
Risk Analysis & Technology	8,108	--	5,458	--	5,458
Program Evaluation	3,000	3,000	--	--	3,000
Resident Program	633	--	--	--	--
Health	54,912	--	--	--	--
Occupational Medicine	4,390	--	--	--	--
Epi. & Health Surveillance	39,822	--	--	--	--
Health Physics & Industrial Hygiene	10,700	--	--	--	--
Planning & Administration	23,859	--	22,359	1,500	23,859
Program Direction	22,359	--	22,359	--	22,359
Capital Equipment	1,500	--	--	1,500	1,500
Nuclear Safety Policy	17,180	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--
Other Defense Activities	29,859	--	--	--	--
Security Evaluations	13,180	--	--	--	--
Nuclear Safety Oversight	16,679	--	--	--	--
Weapons Activities	10,239	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--
Marshall Islands	6,800	--	--	--	--
DNFSB	551	--	--	--	--
Total EH	193,968	3,000	27,817	1,500	32,317

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Current Structure	FY 1995	Revised Structure			
		Nuclear Safety Policy	Defense Dose Recon	Security Eval	Nuclear Safety Oversight
Energy Supply Research & Development	143,920	17,180	--	--	--
Environment, Safety and Health Program	126,740	--	--	--	--
Special Projects	4,760	--	--	--	--
Environment	16,860	--	--	--	--
Safety and Quality Assurance	26,349	--	--	--	--
Performance Assessment	3,204	--	--	--	--
Occupational Safety	11,406	--	--	--	--
Risk Analysis & Technology	8,106	--	--	--	--
Program Evaluation	3,000	--	--	--	--
Resident Program	633	--	--	--	--
Health	54,912	--	--	--	--
Occupational Medicine	4,390	--	--	--	--
Epi. & Health Surveillance	39,822	--	--	--	--
Health Physics & Industrial Hygiene	10,700	--	--	--	--
Planning & Administration	23,859	--	--	--	--
Program Direction	22,359	--	--	--	--
Capital Equipment	1,500	--	--	--	--
Nuclear Safety Policy	17,180	17,180	--	--	--
Defense Envir. & Waste Management	9,950	--	9,950	--	--
Dose Reconstruction	9,950	--	9,950	--	--
Other Defense Activities	29,859	--	--	13,180	16,679
Security Evaluations	13,180	--	--	13,180	--
Nuclear Safety Oversight	16,679	--	--	--	16,679
Weapons Activities	10,239	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--
Marshall Islands	6,800	--	--	--	--
DNFSB	551	--	--	--	--
Total EH	193,968	17,180	9,950	13,180	16,679

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Environment, Safety and Health
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FY 1995					
Current Structure		Revised Structure			
		Weapons Dose Recon	Marshall Islands	DNFSB	Total EH
Energy Supply Research & Development	143,920	--	--	--	143,920
Environment, Safety and Health Program	126,740	--	--	--	126,740
Special Projects	4,760	--	--	--	4,760
Environment	16,860	--	--	--	16,860
Safety and Quality Assurance	26,349	--	--	--	26,349
Performance Assessment	3,204	--	--	--	3,204
Occupational Safety	11,406	--	--	--	11,406
Risk Analysis & Technology	8,106	--	--	--	8,106
Program Evaluation	3,000	--	--	--	3,000
Resident Program	633	--	--	--	633
Health	54,912	--	--	--	54,912
Occupational Medicine	4,390	--	--	--	4,390
Epi. & Health Surveillance	39,822	--	--	--	39,822
Health Physics & Industrial Hygiene	10,700	--	--	--	10,700
Planning & Administration	23,859	--	--	--	23,859
Program Direction	22,359	--	--	--	22,359
Capital Equipment	1,500	--	--	--	1,500
Nuclear Safety Policy	17,180	--	--	--	17,180
Defense Envir. & Waste Management	9,950	--	--	--	9,950
Dose Reconstruction	9,950	--	--	--	9,950
Other Defense Activities	29,859	--	--	--	29,859
Security Evaluations	13,180	--	--	--	13,180
Nuclear Safety Oversight	16,679	--	--	--	16,679
Weapons Activities	10,239	2,888	6,800	551	10,239
Dose Reconstruction	2,888	2,888	--	--	2,888
Marshall Islands	6,800	--	6,800	--	6,800
DNFSB	551	--	--	551	551
Total EH	193,968	2,888	6,800	551	193,968

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Environment, Safety and Health
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Current Structure	FY 1996	Revised Structure					
		Envir.	Worker Health & Safety				
			Safety & Health Policy	Worker Safety Haz Mgmt.	Field Support	Info. Mgmt.	Total
Energy Supply Research & Development	166,759	7,200	9,988	12,950	4,320	2,157	29,415
Environment, Safety and Health Program	149,579	7,200	9,988	12,950	4,320	2,157	29,415
Special Projects	--	--	--	--	--	--	--
Environment	16,017	7,200	1,000	--	--	1,157	2,157
Safety and Quality Assurance	27,190	--	8,988	--	4,320	1,000	14,308
Performance Assessment	3,204	--	--	--	890	--	890
Occupational Safety	9,988	--	8,988	--	--	1,000	9,988
Risk Analysis & Technology	8,365	--		--	3,430	--	3,430
Program Evaluation	5,000	--	--	--	--	--	--
Resident Program	633	--	--	--	--	--	--
Health	69,382	--	--	12,950	--	--	12,950
Occupational Medicine	7,390	--	--	--	--	--	--
Epi. & Health Surveillance	49,042	--	--	--	--	--	--
Health Physics & Industrial Hygiene	12,950	--	--	12,950	--	--	12,950
Planning & Administration	36,990	--	--	--	--	--	--
Program Direction	35,490	--	--	--	--	--	--
Capital Equipment	1,500	--	--	--	--	--	--
Nuclear Safety Policy	17,180	--	--	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--	--	--
Other Defense Activities	39,386	--	--	--	--	--	--
Security Evaluations	14,707	--	--	--	--	--	--
Nuclear Safety Oversight	24,679	--	--	--	--	--	--
Weapons Activities	10,688	--	--	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--	--	--
Marshall Islands	6,800	--	--	--	--	--	--
DNFSB	1,000	--	--	--	--	--	--
Total EH	226,783	7,200	9,988	12,950	4,320	2,157	29,415

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FY 1996					
Current Structure		Revised Structure			
		Health Studies			
		Occup. Medicine	Epi. Studies	Internatl Health Studies	Total
Energy Supply Research & Development	166,759	6,650	27,322	27,100	61,072
Environment, Safety and Health Program	149,579	6,650	27,322	27,100	61,072
Special Projects	--	--	--	--	--
Environment	16,017	--	--	800	800
Safety and Quality Assurance	27,190	--	4,580	--	4,580
Performance Assessment	3,204	--	--	--	--
Occupational Safety	9,988	--	--	--	--
Risk Analysis & Technology	8,365	--	4,580	--	4,580
Program Evaluation	5,000	--	--	--	--
Resident Program	633	--	--	--	--
Health	69,382	6,650	22,742	26,300	55,692
Occupational Medicine	7,390	6,650	--	--	6,650
Epi. & Health Surveillance	49,042	--	22,742	26,300	49,042
Health Physics & Industrial Hygiene	12,950	--	--	--	--
Planning & Administration	36,990	--	--	--	--
Program Direction	35,490	--	--	--	--
Capital Equipment	1,500	--	--	--	--
Nuclear Safety Policy	17,180	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--
Other Defense Activities	39,386	--	--	--	--
Security Evaluations	14,707	--	--	--	--
Nuclear Safety Oversight	24,679	--	--	--	--
Weapons Activities	10,688	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--
Marshall Islands	6,800	--	--	--	--
DNFSB	1,000	--	--	--	--
Total EH	226,783	6,650	27,322	27,100	61,072

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FY 1996								
Current Structure		Revised Structure						
		Oversight						
		ES&H Eval.	Site Reps.	Analysis & Planning				Total
Energy Supply Research & Development	166,759	6,000	1,400	5,925	--	--	--	13,325
Environment, Safety and Health Program	149,579	6,000	1,400	5,925	--	--	--	13,325
Special Projects	--	--	--	--	--	--	--	--
Environment	16,017	5,670	--	--	--	--	--	5,670
Safety and Quality Assurance	27,190	330	658	2,314	--	--	--	3,302
Performance Assessment	3,204	--	--	2,314	--	--	--	2,314
Occupational Safety	9,988	--	--	--	--	--	--	--
Risk Analysis & Technology	8,365	330	25	--	--	--	--	355
Program Evaluation	5,000	--	--	--	--	--	--	--
Resident Program	633	--	633	--	--	--	--	633
Health	69,382	--	740	--	--	--	--	740
Occupational Medicine	7,390	--	740	--	--	--	--	740
Epi. & Health Surveillance	49,042	--	--	--	--	--	--	--
Health Physics & Industrial Hygiene	12,950	--	--	--	--	--	--	--
Planning & Administration	36,990	--	2	3,611	--	--	--	3,613
Program Direction	35,490	--	2	3,611	--	--	--	3,613
Capital Equipment	1,500	--	--	--	--	--	--	--
Nuclear Safety Policy	17,180	--	--	--	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--	--	--	--
Other Defense Activities	39,386	--	--	--	--	--	--	--
Security Evaluations	14,707	--	--	--	--	--	--	--
Nuclear Safety Oversight	24,679	--	--	--	--	--	--	--
Weapons Activities	10,688	--	--	--	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--	--	--	--
Marshall Islands	6,800	--	--	--	--	--	--	--
DNFSB	1,000	--	--	--	--	--	--	--
Total EH	226,783	6,000	1,400	5,925	--	--	--	13,325

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Environment, Safety and Health
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FY 1996					
Current Structure		Revised Structure			
		Planning & Administration			
		Business Perf. Systems	Program Direction	Capital Equip.	Total
Energy Supply Research & Development	166,759	5,000	32,067	1,500	38,567
Environment, Safety and Health Program	149,579	5,000	32,067	1,500	38,567
Special Projects	--	--	--	--	--
Environment	16,017	--	190	--	190
Safety and Quality Assurance	27,190	5,000	--	--	5,000
Performance Assessment	3,204	--	--	--	--
Occupational Safety	9,988	--	--	--	--
Risk Analysis & Technology	8,365	--	--	--	--
Program Evaluation	5,000	5,000	--	--	5,000
Resident Program	633	--	--	--	--
Health	69,382	--	--	--	--
Occupational Medicine	7,390	--	--	--	--
Epi. & Health Surveillance	49,042	--	--	--	--
Health Physics & Industrial Hygiene	12,950	--	--	--	--
Planning & Administration	36,990	--	31,877	1,500	33,377
Program Direction	35,490	--	31,877	--	31,877
Capital Equipment	1,500	--	--	1,500	1,500
Nuclear Safety Policy	17,180	--	--	--	--
Defense Envir. & Waste Management	9,950	--	--	--	--
Dose Reconstruction	9,950	--	--	--	--
Other Defense Activities	39,386	--	--	--	--
Security Evaluations	14,707	--	--	--	--
Nuclear Safety Oversight	24,679	--	--	--	--
Weapons Activities	10,688	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--
Marshall Islands	6,800	--	--	--	--
DNFSB	1,000	--	--	--	--
Total EH	226,783	5,000	32,067	1,500	38,567

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
(dollars in thousands)

01/26/95

Current Structure	FY 1996	Revised Structure			
		Nuclear Safety Policy	Defense Dose Recon	Security Eval	Nuclear Safety Oversight
Energy Supply Research & Development	166,759	17,180	--	--	--
Environment, Safety and Health Program	149,579	--	--	--	--
Special Projects	--	--	--	--	--
Environment	16,017	--	--	--	--
Safety and Quality Assurance	27,190	--	--	--	--
Performance Assessment	3,204	--	--	--	--
Occupational Safety	9,988	--	--	--	--
Risk Analysis & Technology	8,365	--	--	--	--
Program Evaluation	5,000	--	--	--	--
Resident Program	633	--	--	--	--
Health	69,382	--	--	--	--
Occupational Medicine	7,390	--	--	--	--
Epi. & Health Surveillance	49,042	--	--	--	--
Health Physics & Industrial Hygiene	12,950	--	--	--	--
Planning & Administration	36,990	--	--	--	--
Program Direction	35,490	--	--	--	--
Capital Equipment	1,500	--	--	--	--
Nuclear Safety Policy	17,180	17,180	--	--	--
Defense Envir. & Waste Management	9,950	--	9,950	--	--
Dose Reconstruction	9,950	--	9,950	--	--
Other Defense Activities	39,386	--	--	14,707	24,679
Security Evaluations	14,707	--	--	14,707	--
Nuclear Safety Oversight	24,679	--	--	--	24,679
Weapons Activities	10,688	--	--	--	--
Dose Reconstruction	2,888	--	--	--	--
Marshall Islands	6,800	--	--	--	--
DNFSB	1,000	--	--	--	--
Total EH	226,783	17,180	9,950	14,707	24,679

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Environment, Safety and Health
FY 1996 Congressional Budget
Comparability Matrix
(dollars in thousands)

01/26/95

FY 1996					
Current Structure		Revised Structure			
		Weapons Dose Recon	Marshall Islands	DNFSB	Total EH
Energy Supply Research & Development	166,759	--	--	--	166,759
Environment, Safety and Health Program	149,579	--	--	--	149,579
Special Projects	--	--	--	--	--
Environment	16,017	--	--	--	16,017
Safety and Quality Assurance	27,190	--	--	--	27,190
Performance Assessment	3,204	--	--	--	3,204
Occupational Safety	9,988	--	--	--	9,988
Risk Analysis & Technology	8,365	--	--	--	8,365
Program Evaluation	5,000	--	--	--	5,000
Resident Program	633	--	--	--	633
Health	69,382	--	--	--	69,382
Occupational Medicine	7,390	--	--	--	7,390
Epi. & Health Surveillance	49,042	--	--	--	49,042
Health Physics & Industrial Hygiene	12,950	--	--	--	12,950
Planning & Administration	36,990	--	--	--	36,990
Program Direction	35,490	--	--	--	35,490
Capital Equipment	1,500	--	--	--	1,500
Nuclear Safety Policy	17,180	--	--	--	17,180
Defense Envir. & Waste Management	9,950	--	--	--	9,950
Dose Reconstruction	9,950	--	--	--	9,950
Other Defense Activities	39,386	--	--	--	39,386
Security Evaluations	14,707	--	--	--	14,707
Nuclear Safety Oversight	24,679	--	--	--	24,679
Weapons Activities	10,688	2,888	6,800	1,000	10,688
Dose Reconstruction	2,888	2,888	--	--	2,888
Marshall Islands	6,800	--	6,800	--	6,800
DNFSB	1,000	--	--	1,000	1,000
Total EH	226,783	2,888	6,800	1,000	226,783

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OVERVIEW

ENVIRONMENTAL ANALYSIS

The Environmental analysis function supports the department's policy formulation framework by providing responsive analysis, options development, and technical international representational activities with respect to significant environmental, resource and associated issues that affect national energy supply, fuel cycle, demand and prices. The program is carried out through analysis, coordination, and policy development actions in response to energy-related domestic and international environmental and associated resource and development issues to assure full development and assessment of policy options for decisions affecting U.S. energy systems and related policies and programs. In FY 1995, the EA function will emphasize issues concerning energy supply, demand and prices and global climate change; transboundary air and water pollution and waste disposal, air quality studies and regulatory analyses; water, waste and natural resource legislative and regulatory proposals; development and application or emissions and economic modeling and international energy-environmental technology cooperation and joint implementation activities.

The International Environmental Issues activities will continue a broad array of data and methods development and applications in topic areas of technology assessments and characterization, and policy analysis and assessments, policy support and assessment synthesis studies associated with global climate change. These will support Department activities on domestic issues as well as in international bodies including the Commission of European Communities, Intergovernmental Panel on Climate Change (IPCC), activities supporting the implementation of the United Nations Framework Convention on Climate Change (FCCC), follow-on activities from the UN Conference on Environment and Development (UNCEO) by the Commission on Sustainable Development (CSD) and global climate related activities of other international groups including the Organization for Economic Cooperation and Development (OECD) Environment and Economic Committees, the International Energy Agency, the International Institute for Applied Systems Analysis and international regional study centers. The aim is to identify policies that can encourage private sector participation in emission reduction and other response strategies. We intend to inform the public of global climate implications and appropriate response options. Other International Environmental Issues include environmental issues multilateral study and negotiating fora such as the Economic Community of Europe, the United Nations Environment Program, and the OECD. Environmental Policy programs will address other emerging environmental and resource related topics such as environment and trade activities under discussion in the General Agreement on Trade and Tariffs and OECD.

The programs of Environmental Issues Analysis include identification and assessment of emerging issues, such as externalities including electromagnetic field health effect impacts and visibility degradation due to plumes and haze; participation in transboundary environmental issues that are studied and subjects if negotiation in bilateral/trilateral groups with Canada and/or Mexico and policy-related study and research planning groups of the National Science and Technology Council (NSTC) characterization of physical environmental, resource, and engineering-cost data for energy supply and end-use technologies, and execution of studies supporting environmentally related actions and proposals for refining and implementing the EPACT and developing the 1995 National energy Policy Plan (NEPP). Activities associated with monitoring progress in emissions reduction under the Climate Change Action Plan, and analyses to support updating the plan if necessary, will be an expanded area of activity in FY 1995. Efforts in Energy Industry Legislative and Regulatory Analysis study areas will continue to analyze impacts on energy industries and national energy supply and demand. In FY 1995, air quality analyses will be primarily in the regulatory areas, emphasizing options analyses in Titles I, II, III and VI of the Clean Air Act Amendments of 1990 and the cumulative impacts of regulations under these titles and Title IV. Legislative analyses will center on the waste and water acts amendments, if the legislation is not completed in this Congress, and on amendment of resource acts such as the Endangered Species Act. Since the Resource Conservation and recovery Act and the Clean Water Act may be reauthorized and amended in FY 1994, regulatory impacts for energy systems due to changes in these statutes will be emphasized.

New efforts in the Emissions and Economic Modeling area will provide improved emission pollutant projections with increased regional detail. To achieve this objective will require emissions studies in key sectors, updated models linking energy use and the economy, and an assessment of the timing and magnitude of the market penetration of new energy technologies. Continued evaluations of the contingent valuation methodology that can be applied within a wide variety of environmental regulatory programs affecting the energy sector will also be undertaken. FY 1994 will see the first comprehensive application and refinement of global economic-energy-environment models derived from several multi-year projects initiated in FY 1990

through FY 1992, with increasing use in FY 95 in support of international activities as well as the requirements of the EPACT.

The major new program area in FY 1993 and FY 1994 for the Environmental Analysis function, Technology Cooperation, will be maintained in FY 1995. This is joint work with other country governments and with private interests in the U.S. and cooperating countries. The Mexico City Air Quality Initiative equally funded by DOE and by the Mexican Petroleum Institute, from FY 1990 to FY 1993 was the first major Environmental analysis effort in the technology cooperation area. The recent Framework Convention on Climate Change increases the relevance of a U.S. initiative announced in February 1992 to assist developing and transitioning countries to conduct joint country energy-environment development needs assessments in order to respond to global climate change obligations. This program, which received multiagency funding in FY 93 and FY 94, as well as partial funding from this function, is jointly managed by Office of Global Environment (OGE) of the DOE and the Environmental Protection Agency (EPA). FY 95 funding for the U.S. Country Studies program will be provided by the Environmental Protection Agency, Agency for International Development and DOE's OGE. A comprehensive Technology Cooperation project -- ADEPT, Assisting Deployment of Energy Practices and Technologies -- was initiated in FY 1993 and utilizes the extensive and long-term technology and practices development and adaptation capabilities of DOE and its multiprogram national laboratories, working with the private sector and existing market development/export promotion programs, to assist developing countries in implementing technology-related actions that improve environmental and ecological conditions locally and globally.

A broad range of contacts are maintained by the program within and outside the Department for all activities within the EA function. The program coordinates activities with other Federal agencies, key Congressional staff, international groups involved in environmental studies and policy development, and private interests.

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FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

LEAD TABLE

Environmental Policy

Activity	FY 1994 Adjusted	FY 1995 Appropriation *	Ajustment	FY 1996 Request *
Policy Studies				
Operating Expenses	$ 7,545	$ 0	$ 0	$ 0
Program Direction				
Operating Expenses	$ 2,105	$ 0	$ 0	$ 0
TOTAL	$ 9,650	$ 0	$ 0	$ 0
Summary				
Operating Expenses	$ 9,650	$ 0	$ 0	$ 0
Unobligated Balances	$ - 169			$ 0
	$ 9,481	$ 0	$ 0	$ 0
Staffing (FTE's)	25	0	0	0

*Funded under Departmental Administration Appropriation for FY 1995 and beyond.

Authorizations:
P.L. 95-91, "Department of Energy Organization Act" (1977)

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL ANALYSIS

I. Preface: Policy Studies

The Environmental Analysis (EA). The EA program supports the Department's policy formulation framework by providing responsive analysis, options development, and international technical activities with respect to significant environmental, resource and associated issues that affect national energy supply, demand and prices. The program is carried out through analysis, coordination, and policy development actions in response to energy-related domestic and international environmental and associated resource and development issues to assure full development and assessment of policy options for decisions affecting U.S. energy systems and related policies and programs. In FY 1995, the program will emphasize issues concerning environmental policy impacts on energy supply, demand, and prices; environment and development, global climate change and environmental issues; transboundary air and water pollution and waste disposal, air quality studies and regulatory analyses; water, waste and natural resource legislative and regulatory proposals; economic and environmental modelling; international energy-environmental technology cooperation activities and energy-related joint implementation actions.

Performance Measures:
o Continue providing annual reports to Congress on technology transfer activities.

o Develop a Department-wide technology transfer marketing brochure and briefing and schedule briefing with appropriate Congressional staffs.

II. A. Summary Table: Policy Studies

Program Activity	FY 1994	FY 1995	FY 1996	% Change
International Environmental Issues	$ 2,000	$ a)	$ a)	
Environmental Issue Analysis	1,090			
Environmental Industry Regulatory and Legislative Policy Analysis	1,105			
Environmental Economic Modeling	1,650			
Technology Cooperation	1,700			
Total, Policy Studies	$ 7,545	$	$	

a) Funding transferred to the Departmental Administration Appropriation.

II. B. Major Laboratory and Facility Funding

Argonne National Lab (East)	$ 1,143	$	$
Brookhaven National Lab	$ 200	$	$
Lawrence Livermore National Lab	$ 140	$	$
Lawrence Berkeley Lab	$ 678	$	$
Los Alamos National Laboratory	$ 605	$	$
Oak Ridge National Lab	$ 927	$	$
Pacific Northwest Lab	$ 927	$	$

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Policy Studies			
International Environmental Issues	POLICY ANALYSIS - Provide policy evaluation of domestic proposals and those made before international organizations including the IPCC, OECD, IEA, ECE, EC, and World Bank. Conduct and support special activities and projects that facilitate negotiation and workshop meetings. Develop international energy and environmental data bases and assess energy sector implications in U.S. and other countries in support of the National Energy Plan and EPACT. Comprehensive analysis of potential responses for Green House Gas (GHG) emission reduction will be carried out using improved quantitative analysis methodologies. Comparison to relative change in potential impacts ranges will be done. Domestic analysis will be supported by more general international analysis. Evaluate potential steps energy supply industries must take to respond to emission reduction options.	Funding transferred to the Departmental Administration Appropriation.	Funding transferred to the Departmental Administration Appropriation.

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Environmental Issues (Cont'd)	GREENHOUSE GAS EMISSION GUIDELINES- Section 1605 (b) requires the Secretary to issue guidelines for the voluntary collection and reporting of greenhouse gas emissions within 18 months after enactment. (EIA will actually operate the voluntary system one the guidelines are in place.) Given the scope of the activities for which guidelines are to be developed (see Section 1605 (b)B) this will be a major undertaking. TECHNOLOGY ASSESSMENT - Develop and maintain an up-to-date information base on market penetration projections for U.S. and other world regions for use in CSD, INC and IPCC efforts. OTHER INTERNATIONAL ISSUES- Activities at OECD, United Nations Economic and Social Council (ECOSOC), General Agreement on Tariffs and Trade (GATT) and United Nations Environment Program (UNEP) concerning crosscutting topics with environment such as trade and development and individual proposals developed.		

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Environmental Issues (Cont'd)	$ 2,000		
Environmental Issue Analysis	ISSUES - Conduct regional environmental assessments for emerging energy/environmental issues; update data and improve economic data base on environmental control technology costs and regulatory compliance costs; review air quality issues on incinerators; study role of power plant NOx emissions in ozone control; and review of alternative-fuel vehicle impacts on regional ozone, continue electric utility air toxic program, review with states electricity related externality issues INTERAGENCY PROJECTS - Continue visibility analyses for review of National Ambient Air Quality Standards (NAAQS).		

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III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Issue Analysis (Cont'd)	TRANSBOUNDARY ISSUES - Develop analyses in support of U.S. positions in negotiations with Canada on air quality accord.		
	TECHNOLOGY CHARACTERIZATION -Initiate update of the Technology Characterizations handbook.		
	BIENNIAL REPORTS: Initiate Environmental Chapter and International Environmental Issues Chapter support activities for 1995 National Energy Plan.		
	NATIONAL CLEAN INDUSTRY INITIATIVE: Manage the development and implementation of the Secretary's National Clean Industry Initiative, a Reinventing Government initiative approved by the White House. Plan and manage deployment of state-based one-stop-shops for energy efficient, pollution preventing technologies, products, and services spanning all federal agencies. Support the development of the master information system that will support the one-stop-shops. Conduct necessary program evaluations. Develop and support the formation of the Clean Industry Coordinating Council to address the broader range of stakeholder perspectives in overcoming impediments and barriers to industry implementation. Coordinate an interagency approach for formulating recommendations for White House approval.		

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Issue Analysis (Cont'd)	ENVIRONMENTAL PROGRAM REVIEW: Conduct program evaluations on crosscutting environmental programs. Develop budgetary strategies that reflect prioritized, performance-oriented investment strategies, coordinating inputs from various other policy and program offices involved in environmental programs/activities. Continue support to the Department's internal waste minimization and pollution prevention program, aimed at reducing waste generation at DOE facilities. Comply with DOE directives requiring Policy Office review of Environment, Safety, and Health Five Year Plans of Headquarter programs, Field Offices and laboratories. Support DOE quality teams directed at DOE waste management and environmental restoration. Generally support policy positions and participation on interagency environmental issues dealing with federal facilities, such as DOE's Environmental Restoration and Waste Management Facilities and Defense Complex facilities, including the review and formulation of related Presidential Executive Orders, interagency agreements, review and comment on proposed legislation, and review of DOE and other agency testimony.		
	$ 1,090		

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III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Industry Regulatory and Legislative Policy Analysis	ANALYSIS OF REGULATIONS - Evaluate proposed regulations and results of the CAA including impacts of SO2 new source performance standards on new fossil fuel utility units; assess economic opportunities for utility and non-utility energy sectors under the acid rain emission trading opt-in assess results of ozone modeling efforts in States with NOx and VOCs. Assess the environmental, technical and economic impacts on energy industry from regulatory development of recycling and industrial solid waste provisions of the Resource Conservation and recovery Act. Provide analysis of regulatory promulgation regarding toxics and non-point source subtitles of the Clean Water Act (CWA) and regarding Class II and Class V Control Program. Assess energy-related waste minimization and waste management options available to meet regulations promulgated under the RCRA Corrective Action Rule on the impacts of changes in wetlands regulation and in coastal effluent discharge. Continue assessment of the implementation of regulations for alternative fuel vehicles.		
	ENERGY END-USE ENVIRONMENTAL STUDIES: Assess the likely impact on energy transformation, distribution and demand of the CAAA and other environmental policies, with particular emphasis on: refiner and fuel supplier response to EPA regulations; state level activity under CAAA and Energy Policy Act (EPACT) and impacts of new fuel production and utilization technologies designed to meet environmental objectives. Assess the potential environmental and related economic benefits (and costs) of energy demand		

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Industry Regulatory and Legislative Policy Analysis (Cont'd)	policies, e.g., improved efficiency and introduction of alternative fuels, with particular emphasis on the effects on emissions of greenhouse gas emissions. Compare likely long-term effects of regulatory, economic and other policies to reduce greenhouse gas emissions, as required by EPACT. Develop and evaluate specific policy options for modifying strengthening demand policies, as needed with particular emphasis on the industrial and transportation sectors.		
	Assess the actual impacts of energy efficiency, alternative fuels and other demand policies established by the Energy Policy Act (EPACT) with particular emphases on policies directed at efficiency improvements in the buildings and industrial sectors and the introduction of alternative fuels in the transportation sector. Re-examine energy demand policies in light of environmental legislation and international agreements. Develop and apply analytical methods to determine how Federal energy efficiency standards and other programs initiated by EPACT or other legislation would reduce emissions of greenhouse gases. Compare likely long-term effects of regulatory, R&D and other policies. Develop and evaluate specific policy options for modifying or strengthening demand policies, as needed with particular emphasis on the industrial and transportation sectors. Conduct energy efficiency and other demand-related policy and program analyses required by EPACT.		

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Industry Regulatory and Legislative Policy Analysis (Cont'd)			
	$ 1,105		
Environmental Economic Modeling	Continue work in the application of contingent methodologies to visibility, climate change, and other environmental concerns with energy sector implication. Expand and modify integrated modeling and analysis capabilities especially as applied to models that will be used to produce the 1995 biennial energy report. Evaluate the impacts of market barriers and rates of technology diffusion on the size and timing of the role that new technologies in determining future energy use and associated levels of pollutants and greenhouse gas emissions. Conduct evaluations of linkages between economic, regulatory and environmental systems addressing topics such as the impact of global change on economic systems.		

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Economic Modeling (Cont'd)	Conduct various evaluations--evaluate the Clean Air Act auctioning system for sulfur dioxide emissions; evaluate the costs for controlling greenhouse gas emissions; evaluate the impacts that various emission control strategies have on international trade; measure the benefits and costs associated with global warming; evaluate alternative policies for controlling global change and determine appropriate measurements of outcomes and enforcement issues. Section 1602 requires the Secretary to conduct least cost energy modeling with particular attention to environmental issues. The added environmental considerations and targets will require some complex constrained optimization modeling to achieve the desired balances between least-cost policies and environmental gains. Least-cost policies will not necessarily be the best environmental policies. While increased energy efficiency and reducing energy consumption can be modeled by conventional methods, additional modeling effort to achieve the multiple objectives of the Act is needed. (i.e., the legislation sets specified targets for the level of renewables, for reduced energy consumption, and least-cost policies.) Additional model development will also be required to permit specific incorporation of emerging environmentally beneficial energy processes into existing models.		

III. Policy Studies (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Economic Modeling (Cont'd)			
	$ 1,650		
Technology Cooperation	MEXICO CITY PROJECT- Follow-on activities to Mexico City Project in the asessment of visibility and particles. $ 500 COUNTRY STUDIES - Provide funding to interagency new project on Country Studies supporting developing and transitioning countries. Provide joint leadership with EPA in this effort. $550 ASSISTING DEPLOYMENT OF ENERGY PRACTICES AND TECHNOLOGIES (ADEPT) In FY 1993 DOE has allocated $0.75 millio to this program.		
	$ 1,700		
Policy Studies	$ 7,545		

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL ANALYSIS

I. Preface: Program Direction

II. A. Summary Table: Program Direction

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Program Direction	$ 2,105	$	$	
Total, Program Direction	$ 2,105	$	$	

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	Provide salaries, benefits, travel, training and other support for 25 FTEs. 25.0 FTE $ 2,105		
Program Direction	25.0 FTE $ 2,105		

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

SCIENTIFIC AND ENGINEERING TRAINING AND DEVELOPMENT PROGRAM

The Office of Professional and Technical Training and Development conducts the Scientific and Engineering Training and Development Program. This Program has been enhanced to meet the initiatives necessary to implement the Secretary's technical excellence policy. Specifically the Office will continue to develop and monitor:

1. The operation of the Energy Technical Training Center to educate and train new recruits, current staff, and managers for current and future technological challenges;

2. The implementation of the standards program for scientific and engineering training and education which incorporates the principles of the Systematic Approach to Training;

3. The implementation of the qualification and testing program for DOE scientific, engineering, and technical personnel;

4. The implementation of policies, programs, and projects to strengthen the scientific, engineering, and technical training infrastructure within the Department;

5. A centrally coordinated curriculum for scientific, engineering, and technical Federal personnel;

6. The curriculum and presentation of courses in support of a centrally managed technical intern program; and

7. A comprehensive program, in conjunction with appropriate colleges and universities, to enhance the level of education of DOE scientific, engineering, and technical Federal personnel.

During the Fiscal Year 1995 Congressional budget process, committee action deleted the Scientific and Engineering Training and Development Program from the Energy Supply, Research and Development appropriation and placed it in the Departmental Administration appropriation. Output measures have been incorporated within the Departmental Administration budget request.

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Scientific and Engineering Training and Development Program

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Scientific and Engineering Training and Development Program					
Operating Expenses	$ 3,764	$ 0	$ 0	$ 0	$ 0
Construction	1,000	0	0	0	0
Subtotal, Scientific and Engineering Training and Development Program	$ 4,764	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 4,764	$ 0	$ 0	$ 0	$ 0
Summary					
Operating Expenses	$ 3,764	$ 0	$ 0	$ 0	$ 0
Construction	1,000	0	0	0	0
Total Program	$ 4,764	$ 0	$ 0	$ 0	$ 0
Staffing (FTEs)	21	0	0	0	0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Scientific and Engineering Training and Development Program

FY 1995 Appropriation	$ 0
- Adjustment -	0
FY 1995 Adjusted	$ 0
- Transfer -	0
FY 1995 Comparable	$ 0

Scientific and Engineering Training and Development Program

- Operating Expenses - General Budget Reduction	0
- Operating Expenses - Technical Training Center - Provides New Funding for the Operation of the Energy Technical Training Center	0
FY 1996 CONGRESSIONAL Budget Request	$ 0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

SCIENTIFIC AND ENGINEERING TRAINING AND DEVELOPMENT PROGRAM

1. Preface: Scientific and Engineering Training and Development Program

The Department is faced with serious challenges concerning the training and development of highly technical personnel. Historically, contractors have provided scientific and engineering oversight and direction for its numerous technical programs and facilities. This situation is changing, placing technical management and oversight clearly under Federal control. DOE's ability to manage its complex programs and facilities depends in large part on its ability to train and develop a highly skilled staff of scientists and engineers in what is and will be a very competitive market.

In response to these challenges, the Office of Professional and Technical Training and Development has initiated a variety of programs to enhance the training and development of highly skilled professionals to staff and manage the Department's technically complex programs and facilities. The Secretary has issued a policy on technical excellence within the Department. Consistent with this policy, the Office will provide the standards, coordination, and oversight to assure adequate, uniform technical training and development programs for all levels of professional development. A process of retraining incumbents, training interns and new hires, coupled with work experiences in the field and headquarters, will provide a cadre of personnel from which the Department can fill senior technical managerial positions with qualified personnel.

The Scientific and Engineering Training and Development Program's goals and objectives includes a concept of operations that promotes technical inquisitiveness and accountability requiring technically proficient managers and staff. An integral part of the approach is performance based training. This includes defining the job skills and attributes needed in the field and at headquarters, complemented by the necessary mix of training programs to satisfy job needs. The focus is on assuring that professional staff with technical or scientific education can and will receive additional training to perform their assigned duties and ensure their continued development as technology moves forward. The strategy is to continue to develop and teach basic fundamentals of oversight as well as technical subjects consistent with the Department's philosophy of technical management which requires technical proficiency. Technical inquisitiveness and accountability can be fostered and promoted only by having technically proficient managers, supervisors, and professional staff who are able to monitor contractor performance so there is an incentive for excellence. Technology courses are being developed, ranging from basic generic orientation courses, interim remedial training courses, and site specific courses to advanced, graduate level training and SES technical manager's training.

Intern programs, Department-wide scholarship programs, co-ops, mentor program, and liaison with academic, industry and other governmental technical resources are underway to support this training and development effort. Plans for a Department of Energy Technical Training Center with a primary focus on applied scientific and engineering knowledge and skills required at all levels of DOE operations, as well as on DOE fundamentals and safety philosophy and facility operations requirements are continuing. Another long-term objective is to have a corporate, aggressive and integrated DOE technical intern program. Recruiting and training the best college graduates will place the Department of Energy in a position from the outset to have fully trained and qualified managers and staff who are technically proficient, committed and knowledgeable in the DOE missions and who reflect the diversity of the nation. The development and retention of these interns will be critical as the expected needs for technical professionals are realized

II. A. Summary Table: Scientific and Engineering Training and Development Program

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 3,764	$ 0	$ 0	$ 0
Operating Expenses - Technical Training Center	1,000	0	0	0
Total, Scientific and Engineering Training and Development Program	$ 4,764	$ 0	$ 0	$ 0

II. B. Laboratory and Facility Funding Table: Scientific and Engineering Training and Development Program

All Other	$ 4,764	$ 0	$ 0	$ 0
Total, Scientific and Engineering Training and Development Program	$ 4,764	$ 0	$ 0	$ 0

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Scientific and Engineering Training and Development Program			
Operating Expenses	Continues funding to support 21 FTE's and associated costs for overseeing and coordinating technical training and development activities. Continues contract funding, at a somewhat reduced level (no inflation), to enhance executive development and intern programs, training standards and guidelines, database management systems to support career development and identification of a core curriculum required for the Department's technical positions.	Funding line transfered to Departmental Administration Account.	
	21.0 FTE $ 3,764	$ 0	$ 0

III. Scientific and Engineering Training and Development Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses - Technical Training Center	$ 1,000	$ 0	$ 0
Scientific and Engineering Training and Development Program	21.0 FTE $ 4,764	$ 0	$ 0

Energy Research

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY RESEARCH

VOLUME 2

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

INTRODUCTION

The Biological and Environmental Research (BER) program develops the knowledge needed to identify, understand, and anticipate the long-term health and environmental consequences of energy use and development through its support of peer-reviewed and competitively awarded research at national laboratories and academic institutions. The BER program uses this scientific knowledge to develop technology that can be used to mitigate or correct adverse consequences of energy use and to underpin policy and regulatory development. The program also uses the Department's unique multidisciplinary scientific and technological capabilities to solve major scientific problems in biology, medicine, and environmental science while contributing to the Nation's economic growth, health care, SUSTAINABLE DEVELOPMENT, and education and training of the scientific workforce and an informed public. The program will continue to emphasize support of small science as called for in the Energy Policy Act of 1992.

HEALTH-RELATED PROGRAMS

The Department's Biological and Environmental Research program's responsibilities began with the establishment of the Atomic Energy Commission in 1947. Research into the potential health impacts of radiation accompanied the initial mandate to develop nuclear energy and nuclear weapons technology. Studies centered on health effects in the Japanese atomic bomb survivors and dose-response studies in experimental animals and specifically addressed long-term, late effects, such as cancer. As definitive information was obtained concerning relatively high levels of radiation exposure, attention was turned to potential effects at lower doses. This concern resulted in a comprehensive long-term research program focused on understanding the underlying, fundamental mechanisms of biological damage from radiation and chemical exposure. The initial laboratory research demonstrated that biological repair and recovery processes operate at low levels of X-ray or gamma exposure, thus providing assurance that radiation protection standards based on linear extrapolation of high doses are indeed conservative. A particular emphasis has been placed, in the design and interpretation of this research, on defining the relationship between results obtained with experimental animals and observations made in humans who were exposed accidentally or occupationally to energy-related chemicals or radiation. Understanding these relationships provides information needed to better define the health risks to people from exposure to these agents and has also provided information and techniques useful in reducing risks to people from environmental or accidental exposures.

As the Nation's lead research program for understanding the health consequences of low-level ionizing radiation, the BER program has provided the scientific information used by other agencies to estimate health risks from radiation exposure. For example, the EPA uses information generated in this program to develop and implement policies for reducing the health effects from indoor radon exposure. A direct consequence of studies on the health effects of low-level ionizing radiation, was an improvement in exposure assessment methods, the development of techniques for detecting individual susceptibility, and the development of bioassays for detecting and monitoring early damage. Information generated in this program is used by DOE's Office of Environment, Safety, and Health to develop a program to monitor and provide medical evaluation and surveillance to current and former workers who were exposed or had potential exposures to hazardous and radioactive materials, as required in the Defense Authorization Act of 1993. Research in this program, coupled with advances in the DOE human genome program, has also led to the commercialization of advanced tools for medical diagnosis, including, for example, advances in flow cytometry and cytogenetics that are used in the diagnosis and detection of some genetic diseases and cancers. The BER program maintains extensive scientific and managerial interactions with the European community, including some collaborative research. Research in this portion of the BER program takes advantage of the latest advances and techniques in cell and molecular biology and biochemistry to obtain information from both cell culture and animal systems.

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The DOE human genome program is exploiting the multidisciplinary capabilities of the national laboratories to complete a structural analysis of the entire human genome, i.e., the deoxyribonucleic acid (DNA) found in a typical human cell, at the molecular level, in the next 10 to 15 years. This effort requires the development of new biological research resources and technologies and the improvement of existing resources and technologies. Results of this work will provide the ultimate structure of human genes and DNA and, therefore, the basis for improved risk estimates, detailed understanding of the mechanism of mutagenesis and carcinogenesis, and an assessment of individual sensitivities to low levels of exposure to physical and chemical agents. In addition, the technologies, databases, and biological resources being developed by the human genome program will have and are having an enormous impact on a wide variety of biotechnology-related industries and research including medicine and health care, agriculture, energy production, waste control, and environmental clean-up. Examples of current spin-offs of the human genome project include the initiation of genome projects for several economically important plants and animals, the Microbial Genome Initiative described below, and the National Institute of Standards (NIST)/Department of Commerce Advanced Technologies Program to develop compact, low-cost, automated DNA analysis technologies for fast, inexpensive detection of human, animal, and plant disease. In addition, technologies and resources developed in the human genome program are being used and exploited world-wide by the multibillion dollar biotechnology industry.

The DOE human genome program is planned and carried out in coordination with the National Institutes of Health (NIH). The primary DOE contribution is the development of capabilities and tools to analyze the genome at the molecular level and to construct physical maps and determine DNA sequences of human chromosomes. This map and sequence information is critical in the identification and isolation of disease genes, for example, and is used as the basis for the development of molecular diagnostic tests for cancer or genetic diseases. The NIH component of this country's Human Genome Project is oriented towards genetic mapping and characterizing disease-related genes by exploiting human and non-human model systems. An important component of both agencies' human genome programs is the Ethical, Legal, and Social Issues (ELSI) program. The ELSI program investigates ethical, legal, and social implications and effects of genome research including worker privacy issues and impacts on the availability of health care and develops educational materials and programs for both the public and for schools. The DOE program is carried out primarily in the national laboratories with some work in the universities while the NIH program is conducted predominantly in academia.

A new research emphasis, that is based on technologies developed in the human genome program, is the Microbial Genome Initiative to characterize the genomes and proteins of environmentally and industrially important microorganisms. This program will develop DNA sequence and mapping information in microbes with significance for energy production, environmental bioremediation, and industrial applications; contributes to DOE's commitment to ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS and SUSTAINABLE DEVELOPMENT; and has great potential to have a substantial economic impact.

The DOE structural biology research program conducts research to understand the relationship between the molecular structure and biological function of macromolecules such as proteins. Such an understanding is critical to advancing the biotechnology missions of the Department in applications ranging from energy production from biomass to environmental remediation. In addition, technologies developed in this program can, for example, be used to better understand the mechanism of action of drugs used to control or treat a variety of diseases. By developing a detailed, three-dimensional understanding of the interaction of drugs with specific molecular structures on the surface or inside of infectious microorganisms, cancer cells, or diseased cells or tissues, for example, drugs can be redesigned to improve their efficiency or effectiveness. DOE has a special responsibility in structural biology for providing the national scientific community with cutting edge facilities, such as synchrotrons and neutron beam sources needed to conduct structure/function research. The new Advanced Light Source at Lawrence Berkeley Laboratory and the Synchrotron Radiation Source at Argonne National Laboratory will provide unique capabilities for structural biology experiments in addition to those already supported by DOE. The DOE program envisions increased support for the operation of user stations for structural biology at these facilities, but also places a high priority on training a new generation of biologists in this rapidly evolving field.

A new initiative is aimed at developing an advanced biomedical science and technology program. This initiative is in response to the need within the United States for a more efficient and cost-effective health care system, coupled with the aim of harnessing some of the unique scientific and technological capabilities that have been developed within the defense and non-defense scientific communities. The unique multidisciplinary capabilities of the Department's Energy Research and Defense Programs laboratories, in cooperation with other Federal programs and in collaboration with universities and the private sector, will be used to develop new and highly innovative medical sensing, imaging and optical technologies for disease diagnosis and therapy.

An interagency emphasis in Bioinformation Infrastructure addresses the need to support the life sciences with information databases related to the structure and sequence of biological molecules. Database tools to support advanced analyses of biological data, critical to the effective and efficient use of the large amounts of information generated, for example, in both structural biology and genome research, are being emphasized. One aspect of this infrastructure will be expanded in FY 1996 through the development of a computational biology program. This program will cut across several BER programs and link research results from these and other research programs through the use of computer science and information technology. A key goal for the computational biology initiative is to provide the basic understanding and infrastructure needed to predict the functions of biological molecules. Achieving this goal requires a better understanding of the relationship between structure and function and the improved analysis of families of similar genes. The initiative will integrate results from the genome program and from structural biology research. Genome research identifies genes and the biological products from those genes. Structural biology research identifies the structures of these gene products. Both research areas create information and require analytical resources that are unique, but new computer software, approaches to solving complex problems, and interconnected data resources are needed to provide crucial bridges across the research areas for the efficient prediction of the structure and function of biological molecules. Predicting the functions of biological molecules will assist in the application of biotechnology to diverse areas of national need. A roadblock to achieving directed and cost-effective applications of biotechnology is the difficulty in obtaining or designing molecules with desired functions; thus, the anticipated results of this new research in computational biology should further the knowledge and technology base for biotechnology and foster sustainable development and U.S. industrial competitiveness.

The Office of Health and Environmental Research in the Office of Energy Research has the responsibility of assuring compliance with 10CFR part 745, Federal Policy for the Protection of Human Subjects; Notices and Rules for all research involving human subjects conducted at DOE facilities or supported by DOE. As part of this assurance, a complete listing of all current DOE research involving the use of human subjects was compiled and made available to Congress and the public in April 1994. Ongoing and future efforts to assure that all current and future DOE research involving human subjects is conducted in full compliance with the Federal Policy for the Protection of Human Subjects include the organization of regional educational meetings for DOE investigators and managers, the establishment of a compliance and audit system, regular updates of the human subjects research database, publication of resource materials, and the conduct of periodic workshops and meetings. These activities support DOE's recognition of both the importance of research involving human subjects and the need to assure that all human subjects research is conducted in full compliance with federal policy.

ENVIRONMENTAL RESEARCH

The environmental sciences program conducts research on: the environmental consequences of past energy use; environmental threats to future affordable energy use; and ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS and SUSTAINABLE DEVELOPMENT through pollution prevention and remediation. The research is conducted by academic institutions and national laboratories through directed, peer-reviewed, competitive awards. The research supports industry through information and technology transfer programs, as well as through better energy policy due to the research results. The environmental sciences program investigates energy-related topics in a wide variety of mediums, including atmospheric and marine environments, terrestrial (especially subsurface) transport, and ecosystems. The research responds to needs identified in the Energy Policy Act of 1992, the US Global Change Research Program, and the Department's mission in Science and Technology as well as Environmental Quality. The focus is on SUSTAINABLE DEVELOPMENT as it is applied to pollution prevention through ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS and to the balance and synergy between economic development and environmental protection. The research programs focus on developing the understanding and capabilities necessary to predict potential environmental impact due to global change; developing tools such as integrated assessments so science-based environmental and energy policy can weigh the benefits and costs; developing and discovering new microorganisms for waste cleanup and pollution prevention; and investigating selected new topics in structural biology such as new enzymes to digest toxic material, sequester carbon, or increase drought resistance in plants.

Previous research results have enabled the Department to respond effectively to national environmental concerns. For example, the national laboratories and the university community are conducting a series of laboratory and field studies of sulfur and nitrogen oxide processing in support of the Energy Policy Act of 1992. The program will continue to conduct cooperative research with the International Global Atmospheric Chemistry (IGAC) Program through the Committee on Environment and Natural Resources of the National Science and Technology Council, and to pursue research on global ozone redistribution and aerosols and their impacts on ultraviolet-B radiation at the surface. In the area of atmospheric transport chemistry and diffusion, DOE continues to conduct field experiments in complex terrains to support improved emergency preparedness and emergency response capabilities for DOE sites; such experiments will continue near Rocky Flats in FY 1996.

The ocean margins program investigates the "missing carbon problem," in which the sink is unknown for about half of the anthropogenic carbon emitted to the atmosphere, through carbon cycling studies in coastal ocean ecosystems. Research has shown that the generation of fixed carbon on the continental shelf is about 30 to 50 percent of the total carbon fixed in the global ocean. The BER ocean margins program objective is to quantify the role of the coastal ocean in the global flux of carbon and to determine whether continental shelves are quantitatively significant in removing carbon dioxide from the atmosphere and isolating it via burial in sediments or export to the interior ocean. The secondary goal of the program is to quantify the mechanisms by which carbon dioxide is assimilated, transported, and transformed in the coastal ocean and to define ocean-margin sources and sinks in global biogeochemical cycles. Because of the importance of carbon in the coastal ecosystem and off-shore energy resources, this research underpins SUSTAINABLE DEVELOPMENT policy decisions for the coastal region.

The subsurface science program includes DOE's primary long-term research related to the geochemistry, hydrology, and microbiology of the subsurface biosphere, including the mobility and stability of natural chemicals and chemical contaminants in subsoils and groundwater, and insights into the hydrologic cycle. The BER program conducts basic long-term research related to in situ environmental restoration in cooperation with DOE sites and with industry. An active technology transfer program has operated since 1987. New discoveries in such areas as organic-radionuclides contaminant transport and deep microbiology are being transferred rapidly to DOE sites and to energy supply and biotechnology industries, as well as to the Environmental Management program. In order to substantially expand the fundamental understanding of the subsurface biosphere by the year 2000, a five-year integrated molecular to field-scale program is being initiated to determine the factors controlling survival of microbial communities in deep subsurface sediments and groundwater, by building on past DOE discoveries of a complex, microbial ecosystem at depths as great as 500 meters that appear to have survived at least 14,000 years. An important goal of research in microbial origins, or "genesis," is to determine if deep microorganisms have survived for millions of years or have been transported in the recent geological past to their current location. This research has broad implications, from refining DOE new bioremediation cleanup methods to understanding the risks of environmental releases of controlled genetically-engineered microorganisms by industry. The microbial genome research draws on this effort and the wealth of knowledge being gained from the human genome and structural biology programs.

The ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS efforts focus on two areas: the use of bioremediation in the management of industrial waste and integrated assessment to identify high leverage payoffs to environmental technology. The ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS integrated assessment research will promote synergistic environmental and economic progress by focusing on opportunities for lowering environmental discharge, minimizing non-renewable resources, and reducing renewable resource use to sustainable levels. Biotechnology will play an important role in waste cleanup activities, both in managing potentially toxic effluents and in producing nontoxic effluents. Bioremediation, the use of living organisms to reduce or eliminate waste products, has been shown to be useful in water purification, detoxification, and sanitization of domestic and industrial sewage. New efforts will be focused on the field-testing of microorganisms already identified as being useful for bioremediation and on the identification and manipulation of additional microorganisms capable of transforming other contaminants.

Long-term ecosystem studies, including studies carried out on the DOE National Environmental Research Parks, provide the Department with the capability to detect and assess environmental changes and trends as well as the consequences of natural and human-induced stresses. Ecological research addresses the response of biological and ecological systems to regional and global environmental changes and to local disturbances resulting from energy-related activities, including those associated with operations at DOE facilities. The research addresses the long-term consequences of these activities on the integrity and sustainability of ecological systems.

A major environmental concern is climate change from emissions of greenhouse gases, especially carbon dioxide from fossil fuel burning. For over 16 years, the Carbon Dioxide Research program has studied carbon dioxide interactions with the atmosphere, the biosphere, the oceans, and the geosphere and the resulting impacts on critical resources. The Carbon Dioxide Research program is the DOE component of the United States Global Change Research program coordinated by the Committee on Environment and Natural Resources of the National Science and Technology Council. This national program was codified by Congress with the Global Change Research Act of 1990.

Global change also figures prominently as a major environmental issue in the Energy Policy Act of 1992. The research is designed to improve the predictability of global and regional climate change and understand the impacts of global change. To provide essential data, the Atmospheric Radiation Measurement (ARM) program was initiated in 1989. ARM will collect cloud and radiation data in three areas of principal climatological significance over a period of approximately 10 years. ARM began providing data from its first ground site in the United States' southern Great Plains during the spring of 1992. The second site in the tropical Western Pacific will become operational in late 1994 or early 1995, and the third site on the North Slope of Alaska will be operational in 1996. ARM will accurately quantify the cloud-climate feedback and significantly improve the parameterizations in the climate change prediction models.

Supporting ARM and the atmospheric chemistry program are DOE operations using unmanned aerospace vehicles (UAVs). These experimental platforms provide access to a region of the atmosphere (the tropopause) where major changes are affecting both the global climate and the global ozone layer. Instrumentation research is being supported through the Department of Defense Strategic Environmental Research and Development Program.

Another major DOE emphasis in global environmental change is the Computer Hardware, Advanced Mathematics, and Model Physics (CHAMMP) program. This program is providing an effective integration of advanced computer hardware and software with the next generation of climate models to accelerate the computing throughput by a factor of 10,000 between 1990 and 2000. CHAMMP executes advanced climate models on massively parallel computers to test emerging technologies. These models will be used to predict long-term changes in the climate system and to understand better the feedbacks among climate processes that result in current prediction uncertainties. CHAMMP is also supporting the international research effort, led by DOE, to compare and evaluate the principal climate change prediction models and to identify the key parts that require improvement.

Research continues on the global carbon cycle to identify the principal sources and sinks of carbon and to explore the synergistic effort of carbon dioxide and climate change on vegetation. Related research in the oceans addresses the exchanges of carbon dioxide at the ocean-atmosphere interface and supports the international World Ocean Circulation Experiment (WOCE). DOE is pursuing economic and integrated assessment research that will underpin strategies for SUSTAINABLE DEVELOPMENT and support better decisionmaking. The research is being expanded to provide direct support of integrated assessment. Activities of the Carbon Dioxide Information and Analysis Center in support of scientists and policymakers will continue as well as a fellowship program that provides interdisciplinary graduate and postgraduate education in global environmental change. The National Institute on Global Environmental Change (NIGEC)is also supported.

MEDICAL APPLICATIONS

This research program, mandated initially by the Atomic Energy Act of 1946 to promote the use of radioactive materials and radiation for medical applications, has provided the scientific and technological foundation for the establishment of nuclear medicine as a major clinical specialty. Research in radioisotope production, radiopharmaceutical chemistry, and radioisotope imaging instrumentation, together with investigation of a broad range of diagnostic and therapeutic applications, not only demonstrated and validated advanced diagnostic and therapeutic capability, but also led to the establishment of a vital radionuclide production, radiopharmaceutical development, and radionuclide instrumentation industry. Technology developed under this program provides a noninvasive capability for detection and localization of small lesions, for quantitative measurement of dynamic organ function, and for selective radioisotope and radiation therapy of cancer. This program is formulated to address a broad range of clinical research requirements. The program includes six major areas: (1) research to develop new radioisotopes, (2) development and application of new radiopharmaceuticals, (3) imaging instrumentation research, (4) exploration of new radiation therapy modalities with emphasis on boron neutron capture therapy, and (5) molecular nuclear medicine to apply molecular biology advances to address research needs in nuclear medicine, all structured to demonstrate the (6) clinical feasibility of new, advanced medical technology that derives from the Department's energy and defense research activities.

Summary of FY 1996 Request

The FY 1996 request provides for:

- Continue base programs for biological research, instrumentation, terrestrial transport, and medical applications plus capital equipment for addressing issues such as radon, origins of subsurface bacteria, and boron neutron capture therapy;
- Continue molecular and cellular biological research in support of biotechnology and health effects programs; while phasing out radiological and chemical physics research in support of the health effects program.
- Enhance development and utilization of national user facility infrastructure for structural biology and genetics by increasing operating support and capital equipment; provide planned capital equipment to cover beamline upgrades and new beamlines for user facilities;
- Expand new phase of the human genome project for advanced sequencing technology and its application for pilot-scale operations in partnership with industry, and provide needed capital equipment;

- Initiate computational biology program to link advances in biological sciences with computer and information services;

- Maintain schedule for projects currently under construction (and base GPP), e.g., Structural Biology Centers at Argonne National Laboratory and Lawrence Berkeley Laboratory, Human Genome Laboratory at Lawrence Berkeley Laboratory, and Environmental and Molecular Sciences Laboratory at Pacific Northwest Laboratory;

- Expand efforts to assure that all research involving human subjects conducted at DOE facilities or supported by DOE is in full compliance with federal policy;

- Maintain global change research (including expanded program framework for atmospheric sciences, ocean margins, and ecosystem research), continue phased deployment of second Atmospheric Radiation Measurement site in Western Pacific and continue development of third ARM site on North Slope of Alaska; augment research on natural sinks and processes for greenhouse gases, and continue UAV operations; and increase focus on global change impacts and integrated assessment for sustainability;

- Initiate ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS focusing on bioremediation of industrial waste and integrated assessment to identify high leverage payoffs for environmental technology;

- In partnership with Defense Programs and industry, exploit dual use capabilities in biological sensors, lasers, and imaging technologies to develop advanced biomedical technologies to meet needs of health care community for improved practices in disease diagnosis and therapy;

- Continuing development of a microbial genome program to explore the fundamental molecular and structural biology of industrially important microorganisms, including bacteria of potential importance for waste clean-up applications;

- Continue development of coupled climate system models for assessments that utilize state-of-the-science computational techniques on the most advanced supercomputers;

- Continue extensive international intercomparison of atmospheric climate models and complete quantification of uncertainties and research requirements;

Performance Evaluation

General performance measures of program outputs for basic research include such metrics as the number of scientists supported, the number of students earning advanced degrees, the number of scientific publications in peer-reviewed journals, the number of awards from professional organizations, and the number of citations in scientific publications. Metrics for the transfer of new knowledge to a technology application include the number of cooperative agreements with industry, the number of projects attaining support from a DOE Energy Technology program, the number of invention records and patents, and the number of industry users at scientific user facilities and the number of small business innovative research projects (SBIR) initiated. For construction projects, metrics can include cost and schedule milestones completed against approved project baseline. These performance measures are easily tabulated, commonly used, and begin to provide a framework for evaluating program efficiency. However, meaningful performance measures in basic science are more useful when described in qualitative, rather than quantitative terms. For example, in order to measure outcomes, or program effectiveness, the impact of the research outputs must be assessed in terms of the quality and impact of the new knowledge gained, its usefulness to technology development, and its longer-term benefit to society. Although there are limited and expensive methods for evaluating the quality of science through peer-review metrics, no metric exists that can accurately measure science's impact on technology and society.

Evaluation of the BER program is routinely conducted through a variety of peer review processes to maintain a high level of scientific quality in the performance of ongoing programs and projects and as a basis for funding new initiatives. Peer review procedures used include:

Panels: To review research proposals received in response to specific program solicitations, ad hoc review panels comprised of outside experts are assembled. All submissions are reviewed by the panel for scientific merit and individually rated by each panelist. Technical staff in the Office of Health and Environmental Research (OHER) review the proposals for programmatic priority. A final merit ranking is then established by program staff and the available funds allocated to the highest ranking proposals. All new and renewal applications, both from DOE facilities or the private scientific sector, are subject to this process. Over a dozen panels were convened in FY 1996 for programs such as the human genome, ELSI, radon, microbial genome, CHAMMP, ARM, UAV, National Biomedical Tracer Facility (NBTF), electron beam, terrestrial carbon research, subsurface sciences, atmospheric science(2), and measurement sciences.

Letter Reviews: New proposals received during the course of the year from both the national laboratories, universities, and the private sector that are not submitted in response to a specific solicitation are reviewed individually by mail review. Technical staff within OHER select three or four experts in the particular scientific area of interest and request a written review of the proposal. These reviews are analyzed by the technical staff person, summarized and circulated for review and comment to a team of OHER technical staff, representing relevant scientific disciplines of the BER program. Senior staff within OHER evaluate the programmatic priority of each proposal. Funding is allocated on the combined basis of scientific merit (quality) and programmatic priority (relevance). The procedure is also employed for review of extramural renewal proposals at three year intervals to consider productivity and merits of newly proposed work.

HERAC: The Health and Environmental Research Advisory Committee (HERAC) was created in 1983 to provide broad oversight and review of the BER program. It reports to the Director, Office of Energy Research, and responds to specific charges developed by that Office. HERAC usually addresses issues such as scope, balance, and direction within selected program areas. HERAC has conducted some 15 program reviews of the BER program since 1984. Three subcommittees developed reports in FY 1994, including the Human Genome, Program for Ecosystem Research, and Protection of Human Research Subjects. At the first meeting of HERAC in FY 1995, the Committee began preparations to address three new charges. The Committee will review and evaluate future directions for the Medical Applications program; a new paradigm for conducting health effects research by incorporating new advances stemming from the Human Genome and Structural Biology programs; and the current BER activities supporting the basic research needs of the Office of Environmental Management and the Office of Energy Efficiency and Renewable Energy.

Office of Program Analysis: The Office of Program Analysis (OPA), within the Office of Energy Research, is charged with conducting scientific peer reviews of selected research areas in the Department. Acting independently of the program office which funds the research, OPA convenes panels of scientific experts to hear technical presentations from each research investigator in the selected research area. The technical merit of each project is determined quantitatively and a meritorious ranking is obtained. Eight program areas within BER have been reviewed by OPA over the past 6 years involving nearly 500 projects.

The Medical Applications program was reviewed by OPA in FY 1992. Approximately 118 individual projects, at laboratories, universities, and medical centers, were reviewed by three panels of outside independent reviewers. The review indicated that 8.5 percent of the projects were outstanding, 47.5 percent were strong, 28 percent were good, 14.4 percent contained some deficiencies, warranting attention by the Program Manager, and 1.7 percent (two projects) were deemed to have serious shortcomings. As a result of the review, all projects with some or serious deficiencies were either terminated or recast and downsized to resolve the concerns.

A portion of the Structural Biology program was reviewed by OPA in FY 1994. Thirty-two individual projects, at both universities and laboratories, were reviewed by a panel of outside independent reviewers. The review indicated that 28 percent of the projects rated excellent, 50 percent rated strong, and 22 percent rated as good.

Portions of the Structural Biology and Genome programs concerned with computation and analysis conducted at both universities and laboratories were reviewed by a panel of outside independent reviewers under the purview of OPA in FY 1994. Of the 10 projects reviewed, 20 percent were rated as outstanding, 20 percent strong, 50 percent good, and 10 percent deemed to have some deficiencies warranting management attention.

As a result of these reviews, the shortcomings identified for "good" projects and deficiencies of weaker projects served as a point of discussion between DOE program staff, the principal investigator, and, where relevant, with the national laboratory management, to clarify and rectify points of concern. Subsequent funding levels for such projects are based, in part, on the response to these deliberations.

At the OPA review of DOE's large computational research programs in FY 1994, four global change programs (including two conducted at DOE laboratories) from the Computer Hardware, Advanced Mathematics, and Model Physics projects (CHAMMP) were evaluated. Three of the four were deemed outstanding, the other very good.

Site Visits: OHER organizes and conducts site visits periodically to review specific laboratory and university programs and large projects. Technical staff within OHER select a team of independent experts for a 2-3 day visit to the research institution. Individual evaluations are prepared by each of the reviewers and returned to OHER. Over 60 site visits have been organized during the past 5 years. In FY 1994, site visits were conducted for nine program areas, including the Human Genome Centers (LANL, LBL, LLNL, plus BNL, University of Washington, and Harvard), Informatics (JHU), Health Effects (LBL, LLNL), X-ray Microscopy (LBL), Climate Modeling (LLNL), ARM (ANL, ORNL), Ocean Margins (BNL), Subsurface Sciences (ORNL, PNL, LBL, and academia), Nuclear Medicine (UCLA), and Boron Neutron Capture Therapy (MIT, New England Medical Center).

Other Review Processes: Other processes have also been employed to obtain peer review of specific components of the BER program. The National Academy of Sciences has conducted evaluations of selected program areas at the request of the Department, most recently for the biomedical isotopes and, in progress, for the radiation research program and, jointly funded with NIH and DOD, on real-time medical imaging. Similarly, the JASON group has provided an assessment of the scientific merit of new proposed program activities. JASON is a group of approximately 55 individuals dedicated to sophisticated scientific and technical research and analysis in support of the national security community. In addition, interagency committees such as the Committee on Earth and Environmental Sciences have conducted peer reviews of program elements.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

LEAD TABLE

Biological and Environmental Research

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Biological and Environmental Research	$319,848	$340,921	-$7,020	$333,901	$333,019
Program Direction	6,889	7,500	0	7,500	7,600
Capital Equipment	20,957	25,701	-1,161	24,540	24,000
Construction	47,482	70,700	0	70,700	67,045
Subtotal, Biological and Environmental Research	$395,176	$444,822	-$8,181	$436,641	$431,664
Adjustment	-$6,878 a/	-$5,401 a/	$0	-$5,401 a/	$0
Total	$388,298 b/c/	$439,421	-$8,181	$431,240	$431,664

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

b/ Funding of $5,170,000 in FY 1994, $17,100,000 in FY 1992 and $28,500,000 in FY 1993 provided by the Defense Environmental Restoration and Waste Management program for the Environmental Molecular Sciences Laboratory.

c/ Excludes $4,700,000 which has been transferred to the SBIR program and $158,000 which has been transferred to the STTR program.

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Summary					
Operating Expenses	$320,360	$343,781	−$7,020	$336,761	$340,619
Capital Equipment	20,526	24,940	−1,161	23,779	24,000
Construction	47,412	70,700	0	70,700	67,045
Total, Program	$388,298	$439,421	−$8,181	$431,240	$431,664
Staffing Total FTEs					
Headquarters	60	62	0	62	62
Field	88	88	0	88	88
Total	148	150	0	150	150

Authorization: P.L. 95-91 "Department of Energy Organization Act" (1977), Section 203

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

SUMMARY OF CHANGES
Biological and Environmental Research

FY 1995 Appropriation	$ 444,822
- Adjustment	- 8,181
FY 1995 Adjusted	$ 436,641
- Maintain analytical technology research	+ 174
- Maintain ongoing environmental research efforts at a slightly reduced level	- 300
- Develop cooperative ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS for bioremediation and integrated assessment research program	+ 6,000
- Maintain efforts in biological research	+ 706
- Phase out radiological and chemical physics research in support of health effects	- 4,535
- Maintain ongoing general life sciences research efforts	+ 1,753
- Initiate new computational biology research program	+ 3,000
- Maintain ongoing global change research efforts	+ 1,552
- Maintain ongoing medical applications research at a reduced level	- 1,132
- Complete maintenance surveillance activities for the Power Burst Facility	- 1,100

- Support new initiative in advanced biomedical technology research and associated capital equipment needs..... + 3,400

- Complete Congressionally directed university projects..... - 10,000

- Maintain program direction needs..... + 100

- Support capital equipment needs for global change, genome, structural biology and the base programs..... - 940

- Increase general plant projects to support high priority ES&H activities..... + 950

- Continue construction of the Structural Biology Centers at ANL and BNL..... - 4,505

- Continue construction of the Human Genome Laboratory at LBL..... - 10,100

- Continue construction of the Environmental Molecular Sciences Laboratory at PNL..... + 10,000

FY 1996 Congressional Budget Request..... $431,664

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

I. Preface: Analytical Technology

Dosimetry and instrumentation research produces the advanced technology required for improved health protection practices and for an enhanced measurement capability that undergirds experimental health, biological, and environmental studies.

Radiation dosimetry research will provide an improved capability for the determination of human exposure to ionizing radiation and to environmental radon which in turn will lead to the enhanced protection of radiation workers and the general population, and a firmer basis for the evaluation of human health risk and for the development of radiation protection guidelines.

Measurement science will provide new technology for chemical characterization of biological systems with high spatial and temporal resolution in support of the health effects program, and for study of ocean and subsurface environments, including mixed hazardous wastes, in support of the environmental sciences program. In addition to providing an advanced instrumentation capability for the health, biological, and environmental research programs, these new measurement technologies are transferred to the private sector for commercial application with the resultant benefit to the U.S. economy of increased international competitiveness.

II. A. Summary Table: Analytical Technology

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Dosimetry Research	$ 4,559	$ 4,186	$ 4,260	$ 74
Measurement Science	4,687	4,520	4,620	100
Total, Analytical Technology	$ 9,246	$ 8,706	$ 8,880	$ 174

II. B. Laboratory and Facility Funding Table: Analytical Technology

Ames Lab	$ 346	$ 309	$ 330	$ 21
Argonne National Lab (East)	599	282	0	-282
Brookhaven National Lab	0	0	0	0
Environmental Measurements Lab	3,493	3,285	3,391	106
Idaho National Engineering Lab	107	145	200	55
Inhalation Toxicology Research Institute	82	0	0	0
Lawrence Berkeley Lab	601	425	340	-85
Lawrence Livermore National Lab	114	57	0	-57
Oak Ridge National Lab	1,769	1,099	915	-184
Pacific Northwest Lab	690	333	0	-333

II. B. Laboratory and Facility Funding Table: Analytical Technology

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	1,445	2,771	3,704	933
Total, Analytical Technology	$ 9,246	$ 8,706	$ 8,880	$ 174

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Analytical Technology			
Dosimetry Research	Increased emphasis was placed on studying behavior of radon and radon daughters in typical indoor environments. These studies coupled with our understanding of particle-size distribution in the indoor environment were used to focus research on determining the lung dose from radon exposure. Studies on interaction of neutrons with matter will be de-emphasized and phased out. Quality assurance and quality control programs to maintain the accuracy of radiation measurements were conducted in collaboration with other federal agencies and governments.	Activities related to understanding radon and its daughters' interaction with biological material will continue. This research will provide information on correctly determining the dose from radon exposure to relevant cells in the human body. Quality assurance and quality control programs for exposure from radon and its daughters will continue by encouraging intercomparison of data from different laboratories and projects. Interaction and transport of neutrons and its secondaries in matter will be reduced in scope.	Characterization of availability and distribution of radon and its daughters in the indoor environment will continue. Complex physical and chemical processes involved in the interaction of radon with indoor air will continue. This information should provide a better estimate of dose from radon exposure to humans. Quality control and quality assurance programs associated with radon exposure studies will continue by providing intercomparison of dosimetry data from different laboratories and projects. Other radiation protection dosimetry research will be reduced in scope.
	$ 4,559	$ 4,186	$ 4,260

III. Analytical Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Measurement Science	The utilization of lasers for characterizing complex mixtures of large molecules were developed with emphasis on techniques making use of highly reliable diode lasers. Techniques were sought for enhanced imaging of biological materials using newly developed probing techniques based on the free electron laser as well as through innovative optics for electron microscopy. The mass spectrometric analysis of mixtures of macromolecules significant in health or experimental studies were pursued using the new technique of laser desorption combined with recently discovered selective variants of mass spectrometry.	Emphasis will be continued on high sensitivity and high resolution techniques for the characterization of biologically active materials. New microscope technology, including atomic force, scanning tunneling, photon tunneling and exciton emission, will be applied to imaging biological materials at the cellular and subcellular level. Laser techniques will be applied in the study of biological macromolacules by mass spectrometry through improved desorption and ionization. Instrumentation to study human exposure and health effects of hazardous materials will be sustained while development of procedures for the routine analysis of radionuclides will be phased down. Distribution of FY 1995 funding by major laboratory and facility is subject to change pending on extensive peer review.	Chemical characterization of biological systems will be sought using new technologies capable of imaging chemical composition with resolution at the cellular and subcellular level. Instrumentation using advanced optional and electrochemical sensors will also be sought. Environmental measurement techniques for oceanographic and subsurface research will be supported with emphasis on remote continuous field monitoring. Distribution of FY 1996 funding by major laboratory and facility is subject to change pending completion of an extensive peer review in FY 1995.
	Funding in the amount of $61,000 and $5,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $105,000 and $5,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $106,000 and $8,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 4,687	$ 4,520	$ 4,620
Analytical Technology	$ 9,246	$ 8,706	$ 8,880

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KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

1. Preface: Environmental Research

Emissions and disturbances from energy sources have impacts at scales from local to worldwide. Environmental research is intended to improve the predictive understanding of the potential environmental consequences of energy production and use, and to identify and quantify energy-related environmental tradeoffs or constraints that may limit or impede SUSTAINABLE DEVELOPMENT. This program addresses the transport of emissions and their behavior through the atmosphere, oceans, solid earth, and ecosystems at differing spatial scales and time sequences. The program is tied to the goal of SUSTAINABLE DEVELOPMENT through increased understanding of the fate of pollutants and the ability to remediate or restore existing or future sites. This information on the impacts of pollutants and their byproducts on the environment provides a basis for pollution prevention technology development. The ability or inability of biological systems to adjust to disturbances from energy extraction, supply, and production is also an important aspect of sustaining ecosystem processes and the development of mitigation techniques to control damage. The broad program focuses on selected areas of research that provide information for unifying concepts that can help solve future energy/environmental concerns. Recent technical advances, such as those in molecular biology, have provided a new fundamental understanding of living organisms as well as new experimental tools. The programs and projects are peer reviewed by outside experts and are competitively awarded.

The Atmospheric program has two components. The first is atmospheric chemistry and addresses the processes that control tropospheric and stratospheric ozone and aerosol formation. Fine aerosols are a continuing scientific issue and current controversy in global environmental change and human health. Reduced emphasis will be placed with the second component which explores transport and diffusion over complex terrain with the goal of enhancing the emergency preparedness and response systems at critical DOE sites.

The Marine program investigates the exchange of energy-related and natural materials between the continental shelf and the open ocean. Close collaboration with other programs conducting open ocean and nearshore research helps understanding the dynamics of the ocean margins and its influence on both land and open ocean systems, particularly from the viewpoint of energy discharges and their assimilation into the ocean. With as much as half of the productivity of the ocean located along the ocean margins, this program is also providing important information on carbon flux and may hold the key to a significant part of the missing component of the world-wide carbon budget.

The Subsurface Science program conducts research on subsurface sediments and groundwater systems, on microbial communities in deep sediments and aquifers, and on the mechanisms that control the mobility of organic-radionuclide complexes. The program addresses the fundamental physical, chemical, and microbiological mechanisms that control reactivity, stability, and transport of chemical mixtures, as well as hydrogeological and geochemical factors that control the presence, distribution, and origins of microbial communities in deep geological systems. Research on microbial origins includes studies of what may be ancient microbial communities that have evolved in situ and communities that have been transported at various times to the deep subsurface. DOE deep microbiological research has gained international recognition and new microorganisms have been discovered at great depths. Research is also conducted on bacterial transport processes, leading to bioremediation and to the assessment of the risks associated with release of genetically engineered microorganisms (GEMs). Additional partnerships with other Departmental elements, particularly DOE/Environmental Management (environmental remediation), DOE/Civilian Radioactive Waste Management (risk assessment based on bacterial long distance transport and survival over millennia) and DOE/Fossil Energy (oil and gas production, in cooperation with industry) are being forged, with the goal of accelerating the development of information and new technologies to meet Departmental needs. Training and problem-solving workshops at various DOE sites, an expanded program of the Subsurface Microbiology Culture Collection for the biotechnology industry to improve international competitiveness in pharmaceuticals, and a Cooperative Research and Development Agreement with industry and several federal agencies are among the elements of a technology transfer program that has operated since 1987.

The microbial genome research will map and sequence microorganisms related to environmental and energy issues of the Department. Priority will be given to those with potential industrial applications. The environmental radon research program is moving to address air quality issues and

I. Environmental Research (Cont'd)

identify high risk areas.

The ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS program will foster economic growth and competitiveness by encouraging the evolution from pollution control and waste management to pollution prevention and resource conservation. Research will be initiated in biotechnology and integrated assessment. Biotechnology will play an important role in waste cleanup activities, both in managing potentially toxic effluents and in producing non-toxic effluents. Bioremediation, the use of living organisms to reduce or eliminate waste products, has been shown to be effective in water purification, detoxification, and sanitization of domestic and industrial sewage. New efforts will be focused on the field-testing of microorganisms already identified as being useful for bioremediation and on the identification and manipulation of additional microorganisms capable of transforming other contaminants. BER will establish one to two field research sites, adjacent to sample processing facilities and instrumentation, where bioremediation strategies can be evaluated and verified on a long-term, iterative basis. These sites will be located at National Laboratories and include partnerships with the bioremediation industry. Strategies will include the release of organisms under controlled conditions that will enable the monitoring of specific activities, the redesign of enzymes to more efficiently catalyze selected chemical reactions, and the genetic engineering of microorganisms containing those enzymes for use in the remediation of wastes recalcitrant to other remediation technologies. The integrated assessment activities will help assure that resources are optimized on process developments where it makes sense, for example, where there is a gain across a large number of companies or industries, or where the wastes to be minimized are particularly harmful. The assessment research will also assist the evaluation of energy and other policy options by providing measures of their expected environmental and sustainable impacts.

Research on Ecosystem Functioning and Response is focused in the Program for Ecosystem Research (PER) to provide knowledge of biological adjustment and impact caused by global change and to develop an understanding of the mechanisms controlling them. This knowledge will assist DOE in resolving its environmental problems and provide a biological basis for making ecological risk and injury assessments. The theoretical, modeling, and field/laboratory experiments will be integrated into multidisciplinary research projects that are coordinated through the DOE Environmental Research Parks.

II. A. Summary Table: Environmental Research

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Atmospheric Science	$ 13,301	$ 13,203	$ 13,320	$ 117
Marine Transport	6,937	7,143	7,155	12
Terrestrial Transport	18,091	18,548	24,305	5,757
Ecosystem Functioning and Response	4,113	5,506	5,320	-186
Total, Environmental Research	$ 42,442	$ 44,400	$ 50,100	$ 5,700

II. B. Laboratory and Facility Funding Table: Environmental Research

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 1,696	$ 1,723	$ 1,752	$ 29
Brookhaven National Lab	4,851	4,326	4,300	-26
Environmental Measurements Lab	1,294	1,334	1,334	0
Fermi National Accelerator Lab	0	0	0	0
Idaho National Engineering Lab	1,048	445	510	65
Lawrence Berkeley Lab	1,560	963	1,015	52
Lawrence Livermore National Lab	1,217	408	230	-178
Los Alamos National Laboratory	933	665	876	211
Oak Ridge Institute for Science & Education	0	50	50	0
Oak Ridge National Lab	3,529	1,865	2,355	490
Pacific Northwest Lab	9,617	8,817	8,797	-20
Sandia National Laboratories	18	0	0	0
Savannah River Ecology Lab	50	0	0	0
Savannah River Technology Center	192	148	300	152
All Other	16,437	23,656	28,581	4,925
Total, Environmental Research	$ 42,442	$ 44,400	$ 50,100	$ 5,700

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Research			
Atmospheric Science	The atmospheric chemistry research program continued to strengthen regional, continental and global dispersion models and enhance studies on ocean-atmosphere exchange processes. The program continued modeling studies to improve the understanding of the important role of emissions of dimethylsulfide from oceanic biota in atmospheric chemistry and cloud radiative properties. The primary data set were the field experiments conducted in FY 1993. These natural emissions and processes must be better understood in order to determine the environmental effects of energy-related pollutants.	The atmospheric chemistry research program will continue to provide data for regional, continental and global dispersion models and enhance studies on ocean-atmosphere exchange processes. The program will continue modeling studies to improve the understanding of the important role of chemistry and cloud radiative properties.	The outside expert review of extra and/or intramural programs and projects will be completed. The atmospheric chemistry research program will continue to focus on tropospheric and stratospheric ozone and fine aerosols to strengthen regional, continental and global models. The program will continue modeling studies to improve the understanding of the important role of chemistry and aerosols in cloud radiative properties.
	Field experiments were continued. The focus remained on the continental and oceanic fate of energy related pollutants.' The university grants program in atmospheric chemistry issued another solicitation.	Field experiments will be delayed; although the focus will remain on the continental and oceanic fate of energy related pollutants. The university grants program in atmospheric chemistry will continue.	Field experiments will be initiated in the Pacific region. The focus will remain the continental and oceanic fate of energy related pollutants.
	The global tropospheric chemistry model was implemented on a massively parallel computer system and was tested with International Global Atmospheric Chemistry (IGAC) program field results.	The global tropospheric chemistry model, implemented on a massively parallel computer system, will continue to be tested with IGAC field results.	The global tropospheric chemistry model will continue to be tested with field results.
	Reanalysis of stratospheric ozone data was enhanced and experimental studies to quality-assure ground based and airborne instruments probing stratospheric ozone-related chemical species and processes were conducted.	Reanalysis of stratospheric ozone data and continued experimental studies to quality-assure ground based and airborne instruments probing stratospheric ozone-related chemical species and processes will continue.	Reanalysis of the stratospheric ozone data will continue. Experimental studies to quality-assure ground based and airborne instruments probing stratospheric ozone-related chemical species and processes will continue.

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III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Atmospheric Science (Cont'd)	Continued reanalysis of surface UV-B data.	Reanalysis of surface UV-B data will continue and UV-B measurement technology development and research on the ecological effects will be initiated.	Reanalysis of surface UV-B data will continue. UV-B measurement technology development will be initiated to begin studies on UV-B impact on ecosystems.
	The Atmospheric Studies in Complex Terrain (ASCOT) field program around the Rocky Flats Plant continued to be coordinated with ongoing studies in the Denver area. The emphasis was on analysis of data obtained from the FY 1993 field experiments. The data from tracers and remote sensing instrumentation was invaluable to validate models of dispersion on the mesoscale (within 100 km).	The ASCOT field program around the Rocky Flats Plant will continue to be coordinated with ongoing studies in the Denver area. The emphasis is on analysis of field data including new intensive measurements in FY 1994. The data from remote sensing instrumentation will be invaluable to validate models of dispersion on the mesoscale (within 100 km) including emergency response models.	The ASCOT research projects have been reviewed by outside experts. The program around the Rocky Flats Plant will continue. The emphasis is on analysis of field data to improve models. The data from remote sensing instrumentation will be invaluable to validate models of dispersion on the mesoscale (within 100 km) including emergency response models.
	A field program in environmental processes and climate research was conducted using the research aircraft. Activities will include support for Atmospheric Radiation Measurement (ARM) and IGAC programs.	The research aircraft will continue to provide the critical experimental support to the atmospheric chemistry studies including those addressing aerosols and changes in ozone concentrations.	The research aircraft will be made available for collaboratory research with other organizational programs to provide the critical experimental support to the atmospheric chemistry studies including those addressing aerosols and changes in ozone concentrations. Selected flights will support ARM.
	$ 13,301	$ 13,203	$ 13,320
Marine Transport	This year initiated the evaluation of the first three year phase of the Ocean Margins program which anticipates the conduct of a fully coordinated interdisciplinary full field year program in FY 1995 and FY 1996. Preliminary evaluation of the studies scoping the burial of carbon in estuarine, shelf, and off-shelf sediments were conducted and were used to locate the site of the FY 1995 field year program. New analytical methods and instruments were evaluated and design changes initiated. Intra-program	This is the year for initiating a major field program. Evaluation of the first three year phase of the Ocean Margins Program will be completed. Studies scoping the burial of carbon in estuarine, shelf, and off-shelf sediments will be completed, evaluated, and transitioned into the comprehensive program. New analytical instruments will be adapted into the program design. The continuing application of molecular biological techniques will be imbedded into the matrix of the field program research plan. Intra-program	The field experimental phase of the Ocean Margins Program (OMP) will be fully operational to quantify the role of the coastal ocean in the global flux of carbon. Activities will include combined satellite, aircraft, shipboard, and moored-instrument measurements to quantify water, carbon, and nutrient fluxes between estuarine systems, the shelf, and the interior ocean near Cape Hatteras, NC, where carbon burial and cross-shelf exchange is expected to be maximum. Field measurements will focus on oxygen and

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III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Marine Transport (Cont'd)	planning and inter-institutional planning was formulated and a plan established for conducting the field year. Logistical staging and coordination of program projects was initiated. Notice for additional complementary projects was promulgated and finalized. Application of molecular biological techniques to biological processes was expanded.	planning and inter-institutional planning will be further refined and the field study site finalized. Logistical staging will continue and all projects will be transitioned into the initial phase of the FY 1995 field program, which will extend into FY 1996.	CO2 budgets, biomarkers, isotopic tracers, and modelling to integrate and assess ocean-atmosphere gas exchange, primary productivity, bacterial respiration, biogeochemical processes, ecological dynamics, and carbon sources and sinks at the land/ocean interface. New molecular biological tools will be utilized to determine how biological processes are regulated and controlled by genetic limitations and environmental variables. Research within the operational phase of OMP will also provide "sea-truth" information for calibrating remotely sensed data on coastal productivity and "dispersal and fate" information for energy-related materials in coastal waters. This information underpins policy decisions on resource development and environmental sustainability in changing coastal areas.
	$ 6,937	$ 7,143	$ 7,155
Terrestrial Transport	Completed testing, modification, and evaluation of the statistical protocol to correlate environmental information with indoor radon concentrations and to identify areas of high radon risk potential. Began developing the methodology for transferring this protocol to industry and state/local agencies for its implementation on a "zip code" size regional scale. Initiated the construction of an additional pair of subsurface structures in a more complex geological	Experimental studies on the subsurface structures that have been equipped for continuous monitoring of environmental variables (temperature, pressure, moisture) and indoor radon concentrations will be conducted. Planning for the construction of an additional pair of subsurface structures in a more complex geological terrain (perhaps in New York) where severe occurrences of indoor radon have been observed. Conduct site-specific field studies to refine the statistical	Peer review of environmental radon research projects will be conducted to maintain a competitive program of cutting-edge science. Research emphasis will be shifted to: 1) quantifying the relationships between environmental variables and radon entry into homes; 2) predicting areas of highest risk potential for indoor radon: and 3) using radon as a tracer to quantify indoor and outdoor processes that affect energy-related emissions and air quality.

III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)	terrain where severe occurrences of indoor radon have been observed. Completed maps of geographic areas with high radon fluxes from soils to the atmosphere. Utilized the radon flux information to address future concerns involving the movement of gases or volatile chemicals in soils and their release into the atmosphere. Examined potential of using radon as a tracer for examining atmospheric transport processes.	protocol to identify areas of high radon risk potential. Measurements of short-lived thoron (radon-220) to help resolve indoor sources, aerosol dynamics, and transport patterns for radon and other contaminants affecting indoor air quality. New research projects using radon as a tracer to quantify indoor and outdoor processes that affect the transport of energy-related emissions will be initiated.	Experimental studies on the subsurface structures that have been equipped for continuous monitoring of environmental variables (temperature, pressure, moisture) and indoor radon concentrations will be continued. A refined statistical protocol for identifying areas of high radon risk potential will be transferred to industry and state/local agencies for implementation. Research projects using radon flux information to address atmospheric transport and air quality concerns will be expanded.
	Continued studies comparing deep microbiological communities with increased emphasis on spatial and vertical microbial heterogeneity. Tested new hypotheses on microbial presence and distribution at the millimeter to meter scale using whole core segments and scale flow cell research as part of GEMHEX series. Continued initial exploratory research on in situ microbial "genesis" and survival of ancient microbial communities using 2500 meter deep Texaco Oil Company and other samples. Began research on fluid inclusions. Increased industry and university outreach in scientific disciplines related to deep microbiology through Pacific Northwest Laboratory Environmental Science Research Center (ESRC). Accelerated intermediate scale simulations related to microbial origins: Deep microbiology research has potential long term benefits to biotechnology, bioremediation, and	Results from analyses of deep subsurface microbiology will be extended to investigations of the spatial and vertical microbial heterogeneity under natural field conditions. Information on microbial distributions in subsurface sediments and groundwater is very limited and is needed by DOE sites and industry to enhance the long term effectiveness (and reduce costs) of bioremediation. Research will continue on "genesis" and survival of ancient microbial communities using samples from the 2500 meter deep Texaco Oil Company samples and from samples from new field sites with natural, sterile controls and where microbiota may be isolated in situ. Cooperative programs with Departmental groups responsible for characterizing and evaluating the risks of storing nuclear waste over 10,000 years in a national high level waste repository will be initiated. Multi-institutional partnerships will	Analysis of deep subsurface microbial communities that appear to have survived for thousands of years, or been transported over kilometer-scale distances will be refined using samples obtained from field study sites. A scientific peer review of all research related to deep microbial origins will be completed. Exploratory sampling at Yucca Mountain, in cooperation with DOE/Civilian Radioactive Waste Management will begin. Training workshops in aseptic sampling and transfer of data from field programs will be accelerated. Transfer of new heat-tolerant and other bacteria from deeply buried sediments to industry will be initiated by Florida State University and the Pacific Northwest Laboratory Environmental Sciences Research Center.

III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)	understanding the mechanisms of natural gas formation. Accelerated transfer of subsurface microbial culture collection isolates to industry. Continued research on the analysis of novel microbial gene sequences, including isolates of anaerobic thermophiles and novel metal-reducing bacteria. Compared gene sequences of subsurface and surface bacteria to determine unique sequences.	be formed for practical applications of studies of the survival of bacteria over millennia, and regional transport of bacteria over thousands of meters. This research has implications that include assessing the evolution of oil and gas reservoirs, and the security of nuclear wastes disposed to geologic sites. Drilling and sampling at two field sites will completed.	
	Exploited new flow cells that simulate subsurface conditions at cost savings compared to field programs. Completed research on code development and field validation of reactive transport models such as HYDROGEOCHEM and integrated new predictive capabilities into controlled intermediate scale flow cells.	Exploit new flow cells that simulate subsurface conditions at cost savings compared to field programs. Plan bench-top simulations of the mobility and stability of organically - complexed radionuclides using unique flow cells that simulate subsurface conditions. Controlled experiments using these flow cells compliment field programs of importance to bioremediation, and do not replace field programs.	Exploit new flow cells that simulate subsurface conditions at cost savings compared to field programs. Maintain research using state of the art flow cells to reduce costs and to test new concepts of value to environmental remediation. Plan one demonstration of flow cell technology to test new remedial action approaches, and assess cost savings in DOE/Environmental Management plume remediation focus area.
	Investigated organic-radionuclide complexes that occurred at DOE sites which represented serious mixed waste cleanup problems. Planned bench top simulations of the mobility and stability of organic-radionuclide complexes and simulated transport of complexes using prototype flow cells. Utilized state-of-the-art physical, chemical, and molecular biological methods to investigate the mobility and stability of organic-radionuclide complexes. The information base on geochemical and microbiological mechanisms that control the stabilization, biodegradation, and mobility of radionuclide complexes is extremely limited. This basic research has long term cost benefits to DOE	Investigate organic-radionuclide complexes that occur at DOE sites which represent serious mixed waste cleanup problems. Refine and integrate new reactive transport models to study mixed waste chemistry (organically - complexed radionuclides) using state-of-the-art flow cells. Incorporate simulations of natural subsurface geochemical and microbiological heterogeneities to evaluate the mobility and/or containment of Cobalt-EDTA complexes in preparation for field studies at DOE sites. Utilize state-of-the-art chemical tracer and molecular biology methods to investigate organic-radionuclide complexes. This laboratory research will compliment a	Investigate organic-radionuclide complexes that occur at DOE sites which represent serious mixed waste cleanup problems. Initiate multidisciplinary research on the mobility and/or stability of Cobalt-EDTA (mixed waste) complexes important to developing new in situ environmental remediation methods. Comparable investigations of other radionuclide complexes will be planned, in partnership with DOE/EM and/or DOE sites and industry. Complete geochemical-microbiological simulations to investigate Cobalt-EDTA using state of the art flow cells. Analyze effects of geochemical-microbiological interactions to contain and stabilize mobile Cobalt-EDTA complexes in support of environmental

III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)	sites nationally, and to industry.	field initiative in bioremediation.	remediation. Plan exploratory testing of one new remediation method to stabilize Cobalt, and reduce the risks of environmental transport. Integrate flow cell research with field research at DOE field site, in partnership with the Environmental Management (EM) program.
	Planned interdisciplinary field program in bacterial transport.	Begin a limited field program in bacterial injection and transport that is needed to overcome the impediments of introducing native bacteria for future in situ environmental remediation at DOE sites. Evaluate/plan bench-top simulations of bacterial transport. Complete characterization of field site on Nature Conservancy lands at Oyster, Virginia to enhance understanding of the hydrogeologic, chemical and physiological mechanisms that control bacterial transport. Continue involvement of stakeholders including Northampton County and State agencies in Virginia.	Continue bacterial transport field experiment at Oyster, Virginia in cooperation with Nature Conservancy, and Virginia county-state groups. Initiate injection experiments. Refine exploratory risk assessment/stakeholder participation process and extend to one DOE study site. Develop partnership with industry-university consortium to transfer site experience, and cooperate with industry-sponsored flow cell experiments using site materials.
	Maintained research facility and technology transfer programs at ESRC, in support of environmental remediation. Modified future directions of PNL ESRC, as required, to increase focus on natural heterogeneity, a high research priority. Completed three year basic research projects which were mature candidates for DOE applied research funding. Maintained PNL Subsurface Environmental Research facility and supported design of flow cells that simulate deep subsurface temperatures and pressures, Developed biotechnology CRADA's.	Maintain research facility and technology transfer programs at Environmental Sciences Research Center (ESRC), in support of environmental remediation. Research at PNL ESRC on natural physical, chemical and microbial heterogeneity using intact cores and outcrop blocks will be maintained, but plans to extend research to humid eastern coastal plain sediments will be curtailed. Technology transfer using intact cores, outcrop blocks and field methods will be enhanced and biotechnology CRADAs based on novel microorganisms from the Texaco site and other sources will be explored. Test series of problem	Maintain research facility and technology transfer programs at ESRC, in support of environmental remediation. PNL ESRC responsibilities to include an expanded technology transfer program, added industry and university outreach, and management of multi-institutional field programs. Hands-on problem solving workshops for DOE sites tested in FY 1995, CRADA development, and other technology transfer in support of site cleanup will be expanded. In partnership with Lawrence Berkeley Laboratory, and Princeton University, new customer needs in DOE/Fossil Energy and DOE/Civilian Radioactive Waste

III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)		solving ("hands on") workshops at DOE sites to transfer basic research experience for environmental remediation, with emphasis on immiscible fluid containment and risk assessment. Mature research in multiphase fluid flow will be reduced. ESRC will cooperate with Florida State University in analysis and test-marketing of the Subsurface Microbiology Culture Collection to industry. One industry market test will be completed.	Management will be addressed with a focus in geomicrobiology. University outreach in microbial ecology and transfer of the DOE Culture Collection to industry at fair market value in partnership with Florida State University will be increased. A business plan to market DOE's Subsurface Microbial Culture Collection to include international competitiveness and jobs creation will be developed with industry/Florida State University.
	Colloids are submicron-sized particles which facilitate the rapid transport of contaminants in groundwater. Reduced research on the origins of inorganic colloids and colloidal aggregates with emphasis on processes that control the formation and deposition of natural colloids in groundwater. Accelerated research at the field scale, on the mechanisms that control bacterial transport and deposition in porous media in support of bioremediation.	Colloids are submicron-sized particles which facilitate the rapid transport of contaminants in groundwater. Restructure laboratory and field research in organic and inorganic colloidal transport and accelerate transfer to DOE sites and other federal agencies. Implement results of FY1994 scientific peer review. Accelerate transfer of state of the art sampling protocols to DOE/DP (WIPP site), DOE sites, EPA and other agencies initiated in FY94. Seek to co-fund research within DOE on colloidal transport. Accelerate technology transfer of colloids research results for environmental remediation. Reduce mature basic research in colloids. Plan multi-university integrated laboratory - field program to reduce costs.	Colloids are submicron-sized particles which facilitate the rapid transport of contaminants in groundwater. Complete colloids technology transfer program at DOE sites. Maintain multi-university program in colloid formation and transport at reduced level. Redirect funds to increase cooperative studies within DOE, and industry.

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III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)	Natural subsurface variability (or heterogeneity) is a key factor that frustrates successful environmental remediation. The horizontal and vertical variability of microbial communities is most poorly understood. Increased research on physical, chemical, and microbial heterogeneity using intact cores, outcrop blocks, and field methods.	Natural subsurface variability (or heterogeneity) is a key factor that frustrates successful environmental remediation. The horizontal and vertical variability of microbial communities is most poorly understood. Initiate integrated research in natural subsurface heterogeneity, with emphasis on how physical (hydrogeologic) and chemical variations control the distribution and abundance of native microbial communities at semi-arid western sites. Develop new statistical and field sampling protocols to assess microbial heterogeneity. Plan to apply results at Hanford site in partnership with DOE/EM and site contractors. Conduct exploratory studies at humid eastern sites.	Natural subsurface variability (or heterogeneity) is a key factor that frustrates successful environmental remediation. The horizontal and vertical variability of microbial communities is most poorly understood. Maintain field research program. Extend research protocols in subsurface microbial heterogeneity to humid eastern sites. Extend experience by supporting field injection experiments in bacterial transport at eastern field site. Develop cooperative research program with the EM program. Seek linkages of research with bioremediation industry will be completed in collaboration with PNL/ESRC.
	Began laboratory experiments and scale-up that will lead to controlled field release of a genetically-engineered microorganism (GEM), with emphasis on bioremediation process monitoring and verification.	In preparation for field release of a genetically - engineered microorganism (GEM), experiments will be initiated in controlled field lysimeters available at ORNL. Focus of the work will be risk assessment, process monitoring and verification, with the goal being an eventual field release for in situ clean up. This project is jointly supported by the BER and EM programs.	Field lysimeter research will continue on the fate, efficacy, and risk assessment of a GEM designed to accomplish in situ bioremediation. This project is jointly supported by the BER and EM programs.
	Research that focuses on the mapping and sequencing of microbial genomes was initiated. Priority for support was given to microorganisms that: (1) relate to the environment and energy; (2) have evolutionary significance; and (3) have potential industrial application. Potential microorganisms of interest included anaerobic hyperthermophiles, metal-reducing bacteria, and bioremediative bacteria. This activity is part of an interoffice initiative to exploit the rapidly	Research that focuses on the mapping and sequencing of microbial genomes will be maintained. Priority for support will be given to microorganisms that: (1) relate to environmental, energy, and other missions of DOE; (2) have evolutionary significance; and (3) have potential industrial application. This activity is part of an interoffice initiative to exploit the rapidly developing technologies in the Human Genome program.	Research that focuses on the mapping and sequencing of microbial genomes will continue. Emphasis will be on high throughput of genomic data using proven technology. This activity is part of an interoffice initiative to exploit the rapidly developing technologies in the Human Genome program.

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III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)	developing technologies in the Human Genome program.		
	No activity.	No activity.	The ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS program will focus on the development of systems-based approaches and solutions to sustainable industrial production through DOE-assisted evolution from "end of pipe" control to green design. New efforts in bioremediation will be focused on the field-testing of microorganisms already identified as being useful and on the identification and manipulation of additional microorganisms capable of transforming other contaminants. One to two field research sites will be established, adjacent to sample processing facilities and instrumentation, where bioremediation strategies can be evaluated and verified on a long-term, iterative basis. These sites will be located at national laboratories and include partnerships with the bioremediation industry. The research will evaluate strategies under different geochemical and hydrological states. Technology development will be a critical focus. Additionally, characterization of biodegradative enzymes and their catalytic activities through application of structural biology will provide seminal data for the advancement of techniques in bioremediation, and it will also enable the development of chemical processes based on the environmentally benign catalysts found in living cells. Further research in microbial biology should enable the identification of additional remediation targets and, through genetic engineering, increase the efficacy of the microorganisms'

III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Terrestrial Transport (Cont'd)			sequestration and degradation processes. Integrated assessments will be conducted so that design and programmatic decisions match environmental goals. Life cycle analyses of important source materials, waste products, and energy sources will be conducted with an emphasis on indirect effects, for example, the use of snap-fits instead of screws to enable faster disassembly, solvent substitutions, and waste heat marketing. Risk assessments will be conducted so that penalties for resource use and disposal can be adequately approximated; for instance, the Toxics Release Inventory may be improved to include human exposure data as well as cancer, birth defects, and other health endpoints.
	$ 18,091	$ 18,548	$ 24,305
Ecosystem Functioning and Response	Ecological research was realigned to focus on experimental and observational studies that provide information needed to assess the potential consequences on terrestrial ecological systems of human-induced atmospheric and climatic changes. Such research will contribute to the identification of energy-related environmental benefits, constraints, or tradeoffs that may enhance or impede SUSTAINABLE DEVELOPMENT, and provide information on potential policy options that could mitigate the changes or ameliorate the resulting adverse ecological responses. Research was focused on improving the predictive understanding of the responses of biological and ecological systems to atmospheric and climatic forcing factors, and identifying the mechanisms	DOE will continue to support peer-reviewed research in universities and in the DOE laboratories on the potential ecological consequences of human-induced atmospheric and climatic changes. Such research will contribute to the identification of energy-related environmental benefits, constraints, or tradeoffs that may enhance or impede SUSTAINABLE DEVELOPMENT, and provide information on potential policy options that could mitigate the changes or ameliorate the resulting adverse ecological responses. Planning will be initiated on how to most effectively use ecological research facilities and capabilities within and across the DOE laboratories, including the DOE National Environmental Research Parks, to address the needed research.	Peer-reviewed research in universities and in the DOE laboratories will be continued on the potential ecological consequences of human-induced atmospheric and climatic changes. Such research will contribute to the identification of energy-related environmental benefits, constraints, or tradeoffs that may enhance or impede SUSTAINABLE DEVELOPMENT, and provide information on potential policy options that could mitigate the changes or ameliorate the resulting adverse ecological responses. Interagency and multi-laboratory projects, involving the use of facilities and capabilities at the DOE laboratories, other agencies, and universities will be initiated to address the needed research. Research will continue to

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III. Environmental Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Ecosystem Functioning and Response (Cont'd)	controlling the responses. Initial emphasis was on experimental and observational studies to quantify direct and indirect responses at the organism, population, community and ecosystem levels to changes in temperature, moisture, and atmospheric composition. The long-term goal is to develop predictive models for use in assessing the consequences on ecological systems of human-induced atmospheric and climatic changes resulting from energy-related emissions of aerosols and greenhouse gases.	Research will continue to focus on improving the predictive understanding of the responses of biological and ecological systems to atmospheric and climatic forcing factors, and to identify the mechanisms controlling the responses. Experimental studies will be continued to quantify direct and indirect responses at the organism, population, community and ecosystem levels to changes in temperature, moisture, and atmospheric composition, with the long-term goal of developing reliable predictive models for use in assessing the potential consequences on ecological systems of human-induced atmospheric and climatic changes resulting from energy-related emissions of aerosols and greenhouse gases.	focus on improving the predictive understanding of the responses of biological and ecological systems to atmospheric and climatic forcing factors, and to identify the mechanisms controlling the responses. Experimental studies will be continued to quantify direct and indirect responses at the organism, population, community and ecosystem levels to changes in temperature, moisture, and atmospheric composition, with the long-term goal of developing reliable predictive models for use in assessing the potential consequences on ecological systems of human-induced atmospheric and climatic changes resulting from energy-related emissions of aerosols and greenhouse gases.
	The DOE National Environmental Research Parks were organized to support site specific activities at DOE national laboratories.	The DOE National Environmental Research Parks will be organized as a network of sites to document the response of ecological systems and communities to atmospheric and climatic variation and to measure and inter-compare the response of these systems to experimental and natural perturbations and stresses associated with energy production.	The DOE National Environmental Research Parks program will continue to support research on the adverse and beneficial responses of ecological systems to atmospheric and climatic variation and to other natural and experimental perturbations and stresses associated with energy production and use.
	Funding in the amount of $661,000 and $22,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $838,000 and $42,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $975,000 and $73,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 4,113	$ 5,506	$ 5,320
Environmental Research	$ 42,442	$ 44,400	$ 50,100

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

I. Preface: Health Effects

The primary objective of the Health Effects research subprogram is to conduct an interdisciplinary program of high-quality, basic and applied, peer-reviewed research and technology development aimed at providing information and technology relevant to understanding and mitigating the potential health effects of energy development, use, and waste cleanup. The thrust of this subprogram is to improve our abilities to estimate the type and magnitude of human health risk that result from low-level exposures to energy-related agents such as radiation and chemicals both at home (e.g., radon) and at work (e.g., waste site cleanup).

Previous studies in the Health Effects research program on the health effects of low-level ionizing radiation and chemicals have led to an improvement in exposure assessment methods, the development of techniques for detecting individual susceptibility to disease, including cancer, and the development of bioassays for detecting and monitoring early damage. With cleanup of chemical and radiation waste sites a major goal of the Department, there is a need for occupational monitoring and health surveillance procedures that can better detect exposure, estimate risks, and define the genetic predisposition factors influencing individual worker susceptibility to chemical or radiation exposure. Current models for predicting exposure and risks are intended to make these predictions at the level of the total population and not at the level of the individual worker. However, factors affecting susceptibility to exposure or disease are known to vary from one individual to another and may, therefore, significantly alter the health impacts of low-level exposures to some individuals more than to others. The Health Effects research program is conducting research to develop new molecular-based tools for health surveillance and biological dosimetry. A major emphasis in this program is on the determination of individual susceptibility. Research is also conducted to increase our understanding, at the cellular and molecular levels, of fundamental mechanisms of the long-term health effects (e.g., cancer, immune system impairment, etc.) of exposure to energy-related materials, that will improve estimates of risks.

An emphasis is placed on research that utilizes the unique resources and tools developed in the Department's human genome and cellular and molecular biology programs. The human genome program, in addition to progress in the mapping and sequencing of human DNA, has made numerous scientific and technologic advances that are having enormous scientific and commercial impacts in research and industry. The Health Effects research program will exploit advances made in the genome program to facilitate their introduction and use in both basic and applied research and as part of the U.S. biotechnology infrastructure.

II. A. Summary Table: Health Effects

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Biological Research	$ 32,257	$ 31,794	$ 32,500	$ 706
Radiological and Chemical Physics	4,726	5,127	592	-4,535
Total, Health Effects	$ 36,983	$ 36,921	$ 33,092	$ -3,829

II. B. Laboratory and Facility Funding Table: Health Effects

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 4,111	$ 3,555	$ 3,825	$ 270
Brookhaven National Lab	505	347	380	33
Inhalation Toxicology Research Institute	6,996	6,408	6,325	-83
Lab of Radiobiology and Environmental Health	1,305	1,217	705	-512
Lawrence Berkeley Lab	2,811	2,802	2,620	-182
Lawrence Livermore National Lab	903	893	980	87
Los Alamos National Laboratory	1,497	1,784	1,030	-754
Oak Ridge Institute for Science & Education	1,694	1,853	1,015	-838
Oak Ridge National Lab	5,343	4,555	4,715	160
Pacific Northwest Lab	3,655	3,975	2,905	-1,070
All Other	8,163	9,532	8,592	-940
Total, Health Effects	$ 36,983	$ 36,921	$ 33,092	$ -3,829

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Health Effects			
Biological Research	Continuing research focused on reducing the uncertainty in current risk estimation by increasing understanding of the fundamental mechanisms of interactions between cells and radiation.	Continue analysis of interspecies and interlaboratory lifetime carcinogenesis studies to increase the utility of the calculated risk factors in the estimation of human health risk. Continue to focus on the acquisition and utilization of information on the biological effects of environmentally relevant doses of energy-related radiation and chemicals and on the mechanisms of carcinogenesis to reduce uncertainties in current risk estimation.	Complete majority of long-term dose-response animal studies designed to evaluate toxicity of energy related agents. Continue development of improved methods for extrapolating results of interspecies carcinogenesis studies to estimate human risk at low levels of exposure.
	Sustained funding and oversight of the radiation biology archive and analysis of data from the dose-response life-span studies.	Sustain funding and oversight of the radiation biology archive and continue to enter data from completed multispecies lifetime carcinogenesis studies.	Complete the entry of data from multispecies lifetime carcinogenesis studies in the radiation biology archive.

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III. Health Effects (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biological Research (Cont'd)	Developed and employed human cell culture models for examining the effects of low levels of chemicals and radiation. Exposed individual human cells to precise and reproducible doses and examined the influence of dose, dose rate, and radiation quality on cell viability, chromosomal aberrations, DNA repair, and mutation induction.	Utilize human cells and tissues to determine the influence of dose, dose rate, at the cellular and molecular levels to improve ability to extrapolate estimates of risk from studies using animals and animal cells to humans.	Develop and use microbeam irradiator at Pacific Northwest Laboratory as a national resource for investigating the interaction of radiation with individual human cells or groups of cells.
	Continued studies that compare cellular and molecular effects in rodents exposed in the laboratory with observed effects in humans (e.g., uranium miners lung cancer).	Expand the use of genetically altered mice to study the roles and effects of specific genes in disease development, especially cancer. Increase focus on new molecular-based tools for health surveillance and biological dosimetry.	Expand research to map spontaneous and induced mutations in mice and identify chromosomal regions in mice that are highly homologous to regions of human chromosomes. These mutants will be used, where possible, to characterize, understand, and, ultimately, to support the mitigation of genetic and developmental disorders that afflict humans. Expand the use of genetically altered mice, e.g. transgenic or targeted mutant mice, to study the roles and effects of specific genes or cancer development and disease susceptibles.
	Continued efforts to quantitate individual differences in susceptibility to exogenous energy-related agents and identify early molecular markers of exposure and disease. Completed studies, in mice, to examine the risk of heritable mutations from radiation exposures.	Expand cellular and molecular studies that examine the roles of specific genes, DNA repair, genetic susceptibilities and environmental factors (e.g. passive and active cigarette smoke) in the induction of lung cancer by radon.	Increase overall emphasis on the characterization of factors affecting individual susceptibility to exposure or disease. Continue research investigating cellular and molecular responses to damage of DNA. Continue to isolate and characterize specific genes that are expressed in response to low levels of exposure to radiation or chemicals and define the minimum exposure necessary for their induction.

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III. Health Effects (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biological Research (Cont'd)	Expanded research aimed at understanding the molecular and cellular mechanisms involved in radon-induced lung cancer and developing the related knowledge necessary to improve estimates of the health risk associated with indoor radon exposure.	Develop probes for the early detection of radon-induced lung cancer in former uranium miners.	Continue development of methods to validate radiation doses received by uranium miners as well as methods to detect the development and susceptibility to lung cancer in these miners. Complete study designed to develop a predictive method for locating residences with unusually high levels of radon.
	Developed database for research at DOE facilities or supported by DOE that involves human subjects. Organized interagency and DOE-wide human subjects research meetings. Continued publication of human subjects research newsletter. Continued biannual meetings with DOE human subjects working group.	Establish compliance and audit system for research involving human subjects. Develop and implement procedures for efficient update of human subjects research database. Update human subjects research resource manual. Organize regional educational meetings for DOE investigators and managers on human subjects research issues. Continue publication of human subjects research newsletter. Continue biannual meetings with DOE human subjects working groups.	Continue implementation of new system to monitor and audit DOE research involving human subjects for compliance with federal regulations. Update human subjects research database. Continue regional educational meetings for DOE investigators and managers on human subjects research issues. Continue publication of human subjects research newsletter. Continue biannual meetings with DOE human subjects working group. Organize interagency human subjects research meeting.
	No activity.	No activity.	Initiate efforts to exploit advances made in the genome program by facilitating their introduction and use in both basic and applied research with a continued emphasis on improved estimation of risk to individuals. Initiate efforts to screen populations for individuals with exposure-induced or heritable conditions that may affect their susceptibility to energy-related materials.
	No activity.	No activity.	Initiate research on the toxicity and the mechanisms of that toxicity of chemicals and radiations found in DOE clean-up sites in support of the DOE's waste cleanup efforts.

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III. Health Effects (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Biological Research (Cont'd)	Funding in the amount of $484,000 and $17,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $621,000 and $31,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $850,000 and $49,000 has been transferred to the SBIR program and the STTR program, respectively.
	$ 32,257	$ 31,794	$ 32,500
Radiological and Chemical Physics	Multi-disciplinary research to elucidate and understand in detail initial physical and chemical interactions between biomolecules and ionizing radiation and chemicals proceeded at a reduced level. This research included measurement and calculation of initial physical events such as ionizations and excitations. Spatial and temporal distribution of these species in condensed phase were investigated. These physical events were then correlated with ensuing chemical events such as radical species. Information obtained from this research was used to enhance understanding of radiobiological effects at low doses and dose rates. Also, effects on biological systems such as cells and organs as a function of radiation quality were studied. Computational and theoretical studies continued on the conformational and structural changes in biomolecules produced by ionizing radiation. A correlation between these changes and ultimate biological effects was investigated.	Research associated with understanding the structure of biomolecules such as DNA and proteins and the structural change under the influence of ionizing radiation will be enhanced. Emphasis will be placed on determining the relationship of these initial structural changes to the biological activity. Phenomenological and mechanistic models for interpolating/extrapolating the biological effects at all levels of organization such as molecular, cellular, organ, etc., will be emphasized. Study of spatial and temporal distribution of initial physical species such as ionizations and excitations in biologically relevant media will continue. These studies will be further extended to determine the distribution of chemical species in the natural environment of the cell.	Investigation of basic physical and chemical processes initiated by interaction of ionizing radiation with matter will be phased out, as will research on characterization of the spatial and temporal distributions of various radiation induced physical and chemical species. Understanding of the structure of biomolecules such as DNA, proteins, and the structural change under the influence of radiation will be investigated. Application of basic physical and chemical process information will be used for the development of biophysical and biochemical models for use in quantifying radiation risk.

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III. Health Effects (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Radiological and Chemical Physics (Cont'd)	Fundamental mechanisms involved in energy transfer processes in biomolecules were investigated to provide a clear identification of various energy transfer pathways. The effect of these various energy transfer pathways on the resulting changes in biomolecules and model liquids were investigated. These studies coupled with description of initial physical and chemical events should provide a sound scientific basis for relating initial damage to the ultimate health effects such as cancer.	Research on fundamental energy transfer mechanisms and pathways in biomolecules will continue in order to study the changes in the biological effects at the cellular and molecular level. When coupled with the results of basic research on the primary physical mechanisms of radiation interaction with biological systems, these studies will provide a firmer basis for relating initial damage processes to the resultant biological effects.	Energy transfer pathways and mechanisms of energy transfer in model biomolecules will be phased out.
	Funding in the amount of $71,000 and $2,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $102,000 and $5,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $12,000 and $1,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 4,726	$ 5,127	$ 592
Health Effects	$ 36,983	$ 36,921	$ 33,092

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

1. Preface: General Life Sciences

The General Life Sciences research subprogram has two major goals: (1) to develop fundamental biological information and technologies that can be applied in studies of energy-related health effects and (2) to develop and utilize unique DOE resources and facilities in support of Departmental and national goals in the areas of biotechnology and biomedical science, energy use and production, and waste cleanup. These goals are accomplished through an interdisciplinary program of high-quality, basic and applied, peer-reviewed research and technology development. Research is conducted in the areas of molecular and cellular biology, the human genome, and structural biology.

General Life Sciences research is closely integrated with the Health Effects research program through its support of molecular and cellular biology research to identify and characterize genes involved in the repair of damage to DNA and to understand mechanisms that control the cell cycle. This information is useful in efforts to estimate individual human health risk from radiation or chemical exposure by helping to identify biological factors that determine an individual's responsiveness and susceptibility to these agents. This information is also important in research to understand fundamental mechanisms of long-term health effects such as the development of cancer. Technology developed in this program, such as that used to detect and identify altered chromosomes commonly found in individuals exposed to toxicants, who have cancer, or one of several different genetic diseases, is also being used in support of the Health Effects research program and is being transferred to the broader research, medical, and commercial biotechnology communities.

The General Life Sciences research program also supports the development and application of new technologies for mapping and sequencing the entire human genome, i.e., the DNA found in a typical human cell. In addition to the fundamental information provided by this research in support of the Health Effects research program, the technologies, databases, and biological resources being developed by the human genome project will have and are having an enormous impact on a wide variety of biotechnology-related industries and research including medicine and health care, agriculture, energy production, waste control, and environmental clean-up. An important new research program that was possible as a result of technological developments in the human genome program is the microbial genome program to characterize the genomes and proteins of environmentally and industrially important microorganisms. This program will develop DNA sequence and mapping information in microbes with significance for energy production, environmental bioremediation, and industrial applications and has great potential to have a substantial economic impact.

Another unique aspect of the General Life Sciences program is its development and support of DOE national user facilities for the determination of biological structure. Current and developing structural biology user facilities at DOE laboratories are increasingly important in the national effort to elucidate the structure of key biological molecules and to relate their molecular structure to their function. Such an understanding is critical to advancing the biotechnology missions of the Department in applications ranging from energy production from biomass to environmental remediation to improving human health through design and production of 'designer drugs' with much greater effectiveness or specificity of action. DOE has a special responsibility in structural biology for providing the national scientific community with cutting edge facilities, such as synchrotrons and neutron beam sources needed to conduct structure/function research. The recently completed 1-2 GeV Advanced Light Source (ALS) and the new Synchrotron Radiation Source at ANL will provide unique capabilities for structural biology experiments in addition to those already supported by DOE. Funding is requested in support of the operation of user stations for structural biology at these facilities and to ensure the training of a new generation of biologists in this rapidly evolving field.

A continuing and expanding thrust that links structural biology and human genome research is the emphasis in Bioinformation Infrastructure, to be developed in FY 1995, that addresses the need to support the life sciences with information databases related to the structure and sequence of biological molecules. Structural biology and genome research create vast amounts of information and require analytical resources that are unique, including new computer software, approaches to solving complex problems, and interconnected data resources, to provide crucial bridges

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I. General Life Sciences (Cont'd)

across the research areas for the efficient prediction of the structure and function of biological molecules. One aspect of this infrastructure will be expanded in FY 1996 through the development of a computational biology program. This program will cut across several BER programs and link research results from these and other research programs through the use of computer science and information technology. A key goal for the computational biology program is to provide the basic understanding and infrastructure needed to predict the functions of biological molecules. Predicting the functions of biological molecules will assist in the application of biotechnology to diverse areas of national need.

II. A. Summary Table: General Life Sciences

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Structural Biology	$ 17,366	$ 19,245	$ 22,357	$ 3,112
Molecular Biology	12,705	12,949	13,080	131
Cellular Biology	6,466	7,526	8,165	639
Genome	61,215	69,174	70,045	871
Total, General Life Sciences	$ 97,752	$ 108,894	$ 113,647	$ 4,753

II. B. Laboratory and Facility Funding Table: General Life Sciences

Ames Lab	$ 237	$ 269	$ 269	$ 0
Argonne National Lab (East)	5,327	4,831	5,472	641
Brookhaven National Lab	9,012	9,394	8,997	-397
Lab of Radiobiology and Environmental Health	1,553	1,215	560	-655
Lawrence Berkeley Lab	12,906	14,000	14,770	770
Lawrence Livermore National Lab	11,515	11,763	11,873	110
Los Alamos National Laboratory	14,475	13,802	13,439	-363
Oak Ridge Institute for Science & Education	1,339	1,327	1,296	-31
Oak Ridge National Lab	7,985	7,964	7,634	-330
Pacific Northwest Lab	1,135	1,331	1,261	-70
Stanford Synchrotron Radiation Lab	982	1,247	1,650	403
All Other	31,286	41,751	46,426	4,675
Total, General Life Sciences	$ 97,752	$ 108,894	$ 113,647	$ 4,753

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Life Sciences			
Structural Biology	Continued to support user stations for structural biology at major DOE facilities such as National Sychrotron Light Source, Stanford Synchrotron Radiation Laboratory, and High Flux Beam Reactor. Provided some funds for staffing user-stations for x-ray microscopy at the ALS at LBL; these microscopes came on line at the end of FY 1994.	Continue to support operation of beamlines for structural biology at DOE national facilities. Begin operation of new beamline for spectroscopy at the ALS at LBL and new multipurpose beamline at SSRL, both of which should be ready for initial testing during FY 1995.	Continue to support operation of beamlines for structural biology at DOE national facilities. Continue operation of new beamlines for spectroscopy and crystallography at the Advanced Light Source at LBL and the new multipurpose beamline at SSRL.
	Supported initial staffing for user service groups for x-ray crystallography and spectroscopy at the GeV and x-ray crystallography at the ALS Synchrotron Radiation Source at ANL. Continued research on new detector concepts to enable full utilization of new generation of light sources.	Continue research into instrumentation and techniques for utilization of the Synchrotron Radiation Source at ANL. Support staffing of a Macromolecular Structural Database to maintain it fully current with flow of submitted structures.	Initiate operation of Structural Biology Center at the Synchrotron Radiation Source at ANL. Continue support of Macromolecular Structure Database jointly with other federal agencies.
	Maintained structural biology research on important macromolecules. Continued to focus on fine structure of chromatin and expanded study of structures of membranes. Developed interdisciplinary centers which combine structural biology, chemistry, computational sciences, and molecular biology for cutting edge research in biotechnology making use of particularly strong opportunities offered by DOE laboratories for development of such centers.	Continue research into relationship of structure and function of biologically important macromolecules. Emphasize application of multiple disciplines to solution of problems in biotechnology and environmental science. Seek new insight into design of structures to perform desired functions, such as enzymes modified to synthesize or consume a specific compound (for example, to detoxify a hazardous waste).	Continue research into relationship of structure and function of biologically important macromolecules. Apply multiple disciplines to solution of problems in biotechnology and environmental science. Seek new insight into structure-function relationships, such as enzymes modified to enhance bioremediation (for example, to detoxify a hazardous waste).

III. General Life Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Structural Biology (Cont'd)	Continued to design at these centers new classes of novel biomolecular structures for use in diagnostic and therapeutic applications, and in research that relates function to molecular structure. Supported the Protein Databank at BNL, an international resource containing three dimensional coordinates of biological macromolecules.	Expand new studies employing computational approaches to predict protein structures.	Expand new studies employing computational approaches to predict protein structures.
	No activity.	No activity.	Initiate computational biology program. Facilitate development of data resources that will permit linkage and integrated analysis of genomic, DNA sequence, and structural biology data. Foster development of computer software and approaches to solving complex problems that can be used to generate, store, and analyze structural biology data.
	No activity.	No activity.	Together with the genome program, ensure that DNA sequence data and genomic data are captured in powerful data structures that will enable different data resources to be interconnected for analysis and subsequent prediction of molecular function. Implement basic computational biology research into powerful and user-friendly tools for data analysis.
	No activity.	No activity.	Ensure interaction of BER programs with other agencies on the coordinated development of biological information resources.
	$ 17,366	$ 19,245	$ 22,357

III. General Life Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Molecular Biology	Continued efforts to map, clone, and characterize human DNA repair genes and other genes involved in response to radiation and chemical insult. Identified DNA sequences governing the expression of DNA repair genes and determine their chromosomal organization in the context of chromosome fine structure being established by the Human Genome Program. Used small fragments of DNAs representing repair genes to isolate and study the repair enzymes, their interactions, and the pathways that determine how DNA damage is fixed or repaired. Determined whether elevated expression of certain repair genes can protect cells against radiation injury. Began examining the degree of intragenomic heterogeneity of repair in humans and determine how this is mediated by specific genes. Utilized new technologies to develop assays for detecting chromosomal changes associated with specific genes (e.g., cancer-causing genes or tumor suppressor genes).	Utilize isolated human, animal, and microbial genes involved in DNA repair to increase understanding of the role of DNA repair in protecting organisms from the effects of exposure to low levels of toxicants. Initiate research using genetically altered mice to characterize the role of DNA repair genes in development and susceptibility to disease.	Begin to use isolated human and animal DNA repair genes and enzymes to assess variability in repair among human populations. Expand the number of genes examined in research using genetically altered mice to characterize the role of DNA repair genes in development and susceptibility to disease. Expand efforts to characterize mechanisms regulating DNA repair to determine the association between deficiencies in DNA repair and increased health risk.
	Used the proteins identified in these studies to develop markers for exposure and increased sensitivity to DNA damaging agents. Continued studies that develop molecular probes and use chromosomal painting techniques to detect chromosome damage, in order to develop more sensitive biological markers of exposure and dose for use in human epidemiological studies.	Initiate research to understand fundamental mechanisms controlling the cell cycle that regulates normal growth. Initiate efforts to transfer information on DNA repair to studies aimed at understanding individual susceptibility to energy related materials. Continue efforts to characterize mechanisms regulating DNA repair to determine the association between deficiencies in DNA repair and increased health risk.	Continue research to understand fundamental mechanisms controlling the cell cycle and alterations in those mechanisms that occur during the development of cancer. Expand efforts to transfer information on DNA repair to studies aimed at understanding individual susceptibility to energy related materials.

III. General Life Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Molecular Biology (Cont'd)	Further developed the technique of chromosome painting, the use of fluorescent-tagged probes which hybridize to specific regions of a chromosome's DNA, for use in detecting chromosome damage.	Continue the development and use of chromosome painting probes and methodologies for use in the detection and characterization of chromosomal damage.	Begin to automate the use of chromosome painting probes and methodologies for detection and characterization of chromosomal damage in large populations.
	Developed new research using technology developed in the genome program, to efficiently characterize the fundamental biology and genetics of industrially important microorganisms.	Initiate research to study the genomes and specific proteins of industrially important microorganisms and to characterize fundamental aspects of their biology that have industrial applications.	Continue research to study the genomes and specific proteins of industrially important microorganisms and to characterize fundamental aspects of their biology that have industrial applications.
	$ 12,705	$ 12,949	$ 13,080
Cellular Biology	Continued study of tissue and organ-specific cytogenetic responses.	Continue the development and use of new cytogenetic technologies, e.g., chromosome painting, to detect and characterize chromosome damage.	Complete the development of cytogenetic technologies, e.g., chromosome painting.
	Developed methods for integration of both DNA clone gene libraries and protein databases to provide a means for identifying expressed genes and gene products that appear in response to genetic stress (e.g., radiation or chemical exposure) and quantify cell responses to the stress. It is important to determine what stress proteins do, how they are regulated, and the exposure levels necessary for their induction.	Isolate and characterize genes that regulate cell proliferation and begin examining alterations in those genes that occur during carcinogenesis. Isolate and characterize the specific genes induced at low levels of exposure to radiation or chemicals and define the minimum exposure necessary for their induction.	Complete studies of genes that regulate cell proliferation and that are induced at low levels of exposure to radiation or chemicals.
	No activity.	No activity.	Initiate studies to develop an understanding of how molecular structure determines the function of biomolecules. Focus efforts on the redesign of microbial enzymes with an emphasis of enzymes having specificity for contaminants of importance to the Department's waste sites.

III. General Life Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Cellular Biology (Cont'd)	No activity.	No activity.	Begin to develop and exploit advances made in the Department's genome, structural biology, and computational biology programs with an emphasis on transfer of knowledge and technology to both research and commercial applications and in support of U.S. biotechnology infrastructure.
	$ 6,466	$ 7,526	$ 8,165
Genome	Maintained FY 1993 level of mapping and sequencing of genetically active and other selected regions of the genome, in order to provide new mapping landmarks. Finished constructing physical maps of the chromosomally aligned DNA clones of several chromosomes. Expanded physical mapping activities. Improved data analysis algorithms and data retrieval software for mapping and sequencing data. Supported improvement of the Human Genome Database for chromosome mapping information with facile interface to sequence and other biological databases. Improved automated and robotized manipulations required to increase the efficiency and reduce the cost of DNA cloning, mapping, and sequencing. Encouraged national laboratory-private sector interactions and technology transfer. Continued efforts to address ethical, legal, and social issues and emphasize educational activity.	Maintain FY 1994 level of chromosome mapping and development of improved resources for mapping and sequencing. Enhance completed chromosomal maps with more detailed features in preparation for DNA sequencing. Begin large scale sequencing by progressive systems integration, from automated sample preparation to interpretation of DNA sequence data. Provide essential improvements in supporting database services and interpretative algorithms. Refine correlations of functionally similar human and mouse chromosomal regions, supporting future use of the mouse model to aid interpretation of human sequence. Encourage national laboratory-private sector interactions and technology transfer. Continue to address ethical, legal and social issues and emphasize educational activities.	Maintain FY 1995 level of chromosome mapping and development of improved resources for mapping and sequencing. Develop more high resolution chromosomal maps in preparation for DNA sequencing. Put more emphasis on scale sequencing by progressive systems integration, from automated sample preparation to interpretation of DNA sequence data. Bring revolutionary sequencing methodologies into proof-of-concept trials. Improve support of database services and development of interpretative algorithms. Refine correlations of functionally similar human and mouse chromosomal regions. Encourage and facilitate national laboratory private sector interactions and technology transfer. Continue to address ethical, legal and social issues and emphasize educational activities. Interact on a broader scale with other programs within and outside of ER. Maintain joint planning and coordination of research with National Institutes of Health and further develop and sponsor joint research initiatives.

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III. General Life Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Genome (Cont'd)	Funding in the amount of $1,482,000 and $48,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $2,149,000 and $107,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $2,273,000 and $170,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 61,215	$ 69,174	$ 70,045
General Life Sciences	$ 97,752	$ 108,894	$ 113,647

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

I. Preface: Medical Applications

This research program, mandated initially by the Atomic Energy Act of 1946 to promote the use of radioactive materials and radiation for medical applications, has provided the scientific and technological foundation for the establishment of Nuclear Medicine as a major clinical specialty. Research in radioisotope production, radiopharmaceutical chemistry, radioisotope imaging instrumentation together with investigation of a broad range of diagnostic and therapeutic applications not only demonstrated and validated advanced diagnostic and therapeutic capability but also led to the establishment of a vital radionuclide production, radiopharmaceutical development, and radionuclide instrumentation industry. Technology developed under this program provides a non-invasive capability for detection and localization of small lesions, for quantitative measurement of dynamic organ function, and for selective radioisotope and radiation therapy of cancer and has achieved a reduction in medical costs through, for example, avoidance of unnecessary surgery.

In recent years, the medical applications program has been reformulated to address a broad range of clinical research requirements. The current program includes six major areas: (1) research to develop new radioisotopes, (2) development and application of new radiopharmaceuticals, (3) instrumentation, (4) clinical feasibility, (5) exploration of new radiation therapy modalities, with emphasis on Boron Neutron Capture Therapy, and (6) molecular nuclear medicine to bring and apply molecular biology advances to address research needs in nuclear medicine. A new biomedical science and technology initiative is planned for FY 1996 in partnership with the Office of Economic Competitiveness of the Department of Energy's Office of Defense Programs.

The radioisotope and radiopharmaceutical chemistry research program develops and evaluates new radioisotopes and labeled compounds for investigating normal and diseased organ function and thus enhancing diagnosis and therapy. The instrumentation program develops improved measurement imaging technology to achieve higher spatial resolution and more accurate quantitation of organ physiology. The clinical feasibility effort extends the basic findings from the research laboratory toward the initial investigation of their applicability in human patients. Radiation therapy research explores the application of new radioactive materials and radiation technology as potential radiation therapy methodologies. Molecular nuclear medicine research will include investigations of radiolabeled molecular probes for neurotransmitter and neuroreceptor studies, while exploiting new molecular biology approaches for labeling and investigating biological function.

The DOE program in molecular nulcear medicine is directed toward development of advanced nuclear medicine technology and initial exploration of its medical applicability. It compliments the National Institutes of Health (NIH) research programs which are more strongly clinical and disease oriented. Advanced procedures and technologies developed under the DOE program become the province of the NIH when larger scale phase III clinical trials are warranted.

The long range goal of the advanced biomedical science and technology initiative is to develop and facilitate the application and transfer of advanced highly efficient medical technologies and scientific advancements to cost-effective clinical applications for commercialization. This initiative is in response to the need within the United States for a more efficient and cost-effective health care system coupled with the aim of harnessing some of the unique scientific and technological capabilities that have been developed within the defense and non-defense scientific communities to accomplish that end and to address the mission needs of the Biological and Environmental Research program of the Office of Energy Research and the Economic Competitiveness Program of the Office of Defense Programs. The DOE national laboratories and off-site grantees offer many multidisciplinary research and development competencies including biological, medical, chemical, and physics research, computational and material sciences, and engineering. Collaborative opportunities with the Advanced Research Projects Agency (ARPA) of the Department of Defense are being discussed.

Traditionally, technology development and research have been sponsored by DOE Defense Programs and Department of Defense programs to meet

I. Medical Applications (Cont'd)

specific missions while other research has been supported by non-defense programs and agencies under the aegis of quite different program missions. It is the potential blending of various communities that holds great promise of making tremendous contributions to the development of new and highly innovative medical technologies of the future. This can only be accomplished by commercialization through U.S. industry, therefore, technology transfer to the private sector is the important final stage of this endeavor.

II. A. Summary Table: Medical Applications

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Radioisotope Development	$ 3,113	$ 1,638	$ 1,256	$ -382
Radiopharmaceuticals	12,216	13,227	10,598	-2,629
Instrumentation	3,519	5,196	6,516	1,320
Clinical Feasibility	2,848	2,191	2,122	-69
Boron Neutron Capture Therapy	8,915	9,777	9,461	-316
Molecular Nuclear Medicine	3,015	5,003	5,947	944
Advanced Biomedical Science and Technology	0	0	3,000	3,000
Power Burst Facility	1,555	1,100	0	-1,100
Congressionally Directed Projects	14,695	10,000	0	-10,000
Total, Medical Applications	$ 49,876	$ 48,132	$ 38,900	$ -9,232

II. B. Laboratory and Facility Funding Table: Medical Applications

Brookhaven National Lab	8,946	9,260	10,267	1,007
Idaho National Engineering Lab	4,860	2,480	1,500	-980
Lawrence Berkeley Lab	2,679	2,392	2,404	12
Los Alamos National Laboratory	701	749	744	-5
Oak Ridge Institute for Science & Education	408	314	317	3
Oak Ridge National Lab	1,171	1,171	1,132	-39
All Other	31,111	31,766	22,536	-9,230
Total, Medical Applications	$ 49,876	$ 48,132	$ 38,900	$ -9,232

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Medical Applications			
Radioisotope Development	Continued improvements in yield, radiopurity, and separation chemistry for selected isotopes including technetium-99m and scandium-47, copper-67, yttrium-90, and samarium-153m for use in radiommunotherapy. Research on biomedical generator systems continued to increase yield and purity. Rhenium-188 and Indium-19lm generators was provided to collaborators for evaluations. Project definition phase studies for a National Biomedical Tracer Facility were initiated.	Efforts in radioisotopes processing, targetry and target chemistry will continue to improve the purity, yield and specific activity of radioisotopes for medical applications. Emphasis will be placed on radionuclide generators which can be made readily available for on-site storage and production of radioisotopes for clinical use. The accelerator, reactor and generator produced radioisotopes including technetium-99m, rhenium-188, copper-67, samarium-153, and yttrium-90 will be explored and evaluated for radiolabeling of immunoconjugates, monoclonal antibodies and molecular probes. Project definition studies for a National Biomedical Tracer Facility will continue.	Efforts in optimizing target design, radioisotope processing, purification and generator development for medically useful radioisotopes will continue. New target chemistry and research will focus on high current machines. Emphasis will be placed on new radioisotope generators for on-site storage, separation, and availability of radioisotopes for medical use in a clinical setting.
	$ 3,113	$ 1,638	$ 1,256
Radiopharmaceuticals	Emphasized development of labeled compounds which will enable the study of fundamental metabolic and physiological processes in both normal and disease states. These include radiolabeled monoclonal antibodies for both diagnosis and therapy and specific ligands for neuroreceptor populations known to be altered in various disease states. Rapid, automated chemical synthesis procedures were developed to label monoclonal antibodies with short-lived positron emitting isotopes for early detection of tumors. Research on the mechanisms of toxicity of drugs of abuse and to assess the metabolic and neurochemical changes associated with drug addiction and withdrawal was continued using a variety of positron labeled drug	Radiolabeling of biologically active molecules including pharmaceuticals, monoclonal antibodies against tumor associated antigens, and the drugs of substance abuse will receive continued emphasis in radiopharmaceutical development for metabolic, diagnostic and therapy studies. Design and synthesis of radioactively labeled medicinal compounds, more commonly known as radiopharmaceuticals, will be continued to improve target selectivity, specificity and localization properties in order to study the concentration of radiopharmaceuticals in body organs by imaging with sensitive radiation detectors. The radiopharmaceutical research will emphasize studies of cancer detection and treatment, brain	New organic synthesis and genetic engineering approaches will be pursued to develop molecular probes of high and selective target specificity. Radiolabeling of new medicinal agents and the agents of substance abuse will continue to receive emphasis. The new radiolabeled agents will be studied for diagnosis and therapy with special focus on heart, brain, and cancer targeting. New radiopharmaceutical advances will be applied to study the biochemical targets, chemical metabolism, and radiopharmaceutical continuation at the target site for effective diagnosis and improved therapy. Radiopharmaceutical research, in addition to the studies of cancer detection and treatment, and brain and heart metabolism, will also contribute

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III. Medical Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Radiopharmaceuticals (Cont'd)	compounds and neurotransmitters. Copper-67 labeled porphyrin compounds were developed to detect cancer cells in sputum samples from patients with early stage lung cancer. These compounds were also evaluated for therapy.	and heart metabolism, and will also contribute to the diagnosis and therapy of other organs disfunction such as cardiopulmonary disease and mental disorders.	to the diagnosis and therapy of other organs.
	$ 12,216	$ 13,227	$ 10,598
Instrumentation	Emphasis was placed on application of medical imaging technology to the study of disease states at the molecular level. Development of high resolution, high sensitivity, and high speed Positron Emission Tomography (PET) systems was continued with two new systems under development. New scintillation crystals such as lead sulfate and cerium doped rare earth compounds was evaluated. SPECT imaging is widely utilized in clinical applications and development of systems with improved resolution and sensitivity was initiated. Design of instrumentation for true three-dimensional (3-D) PET imaging was completed and evaluations started. New image reconstruction algorithms for 3-D representation were completed as well as algorithms for quantitative volumetric calculations of metabolic processes. A synchrotron- based x-ray computed tomography facility to image tumors and atherosclerotic plaques in the major arteries of the head and neck was developed.	Research will be maintained on development of high resolution, functional imaging systems to enable non-invasive study of both normal and abnormal physiology and metabolism at the molecular level. Emphasis will be placed on quantitative measurement of neurotransmitter, neuroreceptor and reuptake sites as related to diagnosis and therapy of brain disease. Evaluation of a three dimensional PET system for pediatric brain studies will be completed. New concepts for PET detector systems with substantial improvements in spatial and temporal resolution will be evaluated. Advanced image reconstruction algorithms which improve spatial resolution and minimize artifacts will be developed. Development of instrumentation for application of synchrotron x-rays to coronary studies, computed tomography and radiotherapy will be enhanced.	New technology for fabricating photodiode detector arrays will be used to assemble PET detector modules with very low electronic noise. The technology will be transferred to a U.S. manufacturer. To overcome the limitation of existing scintillation detectors for PET, a systematic search of promising crystals will be made in collaboration with theoreticians to guide the search. Substantial improvements in spatial resolution and sensitivity are anticipated. High resolution PET systems will be used to identify and quantify measure specific receptor sites in the brain for neurological studies.
	$ 3,519	$ 5,196	$ 6,516

III. Medical Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Clinical Feasibility	Continued neurological studies at national laboratories and university medical centers to define the molecular basis of psychiatric disorders using quantitative PET studies of neuroreceptor sites. Initiated clinical studies with tin-117m Diethylene Tetra-amine Penta-acetic Acid (DPTA), a chelating agent for palliative treatment of bone pain in breast and prostate cancer patients.	Positron emission tomography will be exploited for neuroreceptor/transmitter studies of brain function involving dopamine and serotonin in psychiatric disorders. Evaluation of the tungsten-188/ rhenium-188 generator for immunoconjugate radiolabeling to target tumors and the tin-117m DTPA palliative treatment of bone pain in breast and prostate cancer patients will be continued.	The radioisotope, radiopharmaceutical, and monoclonal antibody agents with promising preliminary biological results through animal screening data will be further developed to study the clinical potential in humans and for technology transfer.
	$ 2,848	$ 2,191	$ 2,122
Boron Neutron Capture Therapy	Phase I clinical tests of boronophenylalanine (BPA) continued and tests of boron sulfhydryl (BSH) were initiated. Research on a variety of boron compounds with improved localization in tumor tissue continued. Accelerator neutron sources were evaluated as a more practical, cheaper alternative to fission reactors.	Emphasis will be placed on the development of new boron containing compounds including porophyrins, nucleosides, liposomes and monoclonal antibodies, with improved biodistribution and pharmacokinetic properties. Reactor neutron facilities for animal and human patient studies will be upgraded. Development of accelerator neutron sources will be continued. Initial clinical studies of boronophenylalanine toxicology will continue and studies of efficacy in treatment of glioma multiforma will be planned. This will be a combined phase I and II clinical trial that involves both the drug and neutron radiation.	A strong emphasis will be placed on conducting human clinical trials, closely coordinated with the Food and Drug Administration, to demonstrate application to the treatment of brain tumors, such as glioblastoma and melanoma. It is anticipated that the compound, boronphenylalanine will advance to Phase II clinical trials using the Massachusetts Institute of Technology reactor, and the fructose derivative of this compound will enter Phase II trials at the upgraded Brookhaven Medical Research Reactor. In addition, Phase I clinical trials on the compound sodium borocaptate will be continued. New facilities and personnel for the compassionate treatment of cancer patients will also be provided. In addition, a core research program will be maintained to develop new boron-labeled compounds, improved neutron beam resources, and accurate radiation dosimetry measurements for treatment planning. Transfer of the technology to general medical practice will be facilitated through assistance to others in the preparation and evaluation of neutr

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III. Medical Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Boron Neutron Capture Therapy (Cont'd)			sources and in development of treatment planning computer codes.
	$ 8,915	$ 9,777	$ 9,461
Molecular Nuclear Medicine	Research in nuclear medicine based on advances in molecular and structural biology continued including design, synthesis, and application of new radiolabeled compounds for neurotransmittal and neuroreceptor studies, high resolution imaging technology, and applications to disease associated target studies.	Molecular nuclear medicine research will exploit the most current molecular biology, biotechnology and nuclear medicine techniques to develop innovative radiolabeled molecular and genetic probes of high specificity; to study the mechanism of macromolecular interactions underlying normal genetic, cellular and physiological processes; and to detect, localize and, potentially ameliorate, macromolecular, cellular and systemic pathologies with much greater selectivity. Current emphasis will be on nucleic acid, peptide, and genetically engineered protein and antibody probes to study neuroreceptors and neurotransmitters regulating brain function and to study cancer cell surface receptors for tumor localization and targeting.	Molecular nuclear medicine will supply new biotechnologies and highly sensitive imaging approaches to study molecular biology in vivo. New innovative radiolabeled molecular, metabolic and genetic markers will be developed to study receptor population, receptor signaling, cell communication and gene expression in normal and disease states. Molecular nuclear medicine will focus on characterizing the defects of the disease at molecular and cellular levels and designing new molecular medicine therapies. Emphasis will continue on nucleic acid, peptide, and genetically engineered protein and antibody probes to study neuroreceptors and neurotransmitters regulating brain function and to study tumor receptors and tumor receptor targeting.
	$ 3,015	$ 5,003	$ 5,947

III. Medical Applications (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Biomedical Science and Technology	No activity.	No activity.	Emphasis will be given to developing and applying microsensors, laser technologies and high resolution portable imaging devices; improving computational analysis of imaging data; and developing patient data and information networks. This will be accomplished by applying the unique capabilities of the Department's Energy Research and Defense laboratories in cooperation with other Federal programs and in collaboration with universities and the private sector.
	$ 0	$ 0	$ 3,000
Power Burst Facility	Initiated preparation for decontamination and decommissioning of the Power Burst Facility at INEL.	Continue preparation for D&D of PBF.	No activity.
	$ 1,555	$ 1,100	$ 0
Congressionally Directed Projects	Congressionally directed projects were conducted. Funding in the amount of $716,000 and $24,000 has been transferred to the SBIR program and STTR program, respectively.	Congressionally directed projects will be conducted. Funding in the amount of $855,000 and $43,000 has been budgeted for the SBIR program and STTR program, respectively.	No activity. Funding in the amount of $778,000 and $58,000 has been budgeted for the SBIR program and STTR program, respectively.
	$ 14,695	$ 10,000	$ 0
Medical Applications	$ 49,876	$ 48,132	$ 38,900

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

I. Preface: Carbon Dioxide Research

The link between carbon dioxide and global warming has important impacts on energy policy, economic development, and international affairs. Additional funds are requested in FY 1996 to accelerate global warming research as part of the United States Global Change Research program (US/GCRP). Emphasis is placed on experimental studies of the cloud-climate feedback, on innovative hardware-software applications to advanced climate models, and on the impacts and mitigation of global environmental change. The program includes a mix of extra and intramural research selected competitively via outside expert peer review. In the core program, the carbon cycle research will address fluxes of Carbon Dioxide (CO_2) between atmosphere, biosphere and land and ocean surfaces, and of cycling of carbon within the terrestrial biosphere and the oceans. This understanding is required for predicting atmospheric CO_2 change due to fossil fuel use and deforestation, and for estimating sinks for excess CO_2 generated by fossil fuel. Products from this research include mechanisms for sequestering carbon as a means for stabilizing atmospheric CO_2. By mitigating atmospheric greenhouse gas increases and associated climate change, this research provides vital information for assessments of future SUSTAINABLE DEVELOPMENT and environmental protection. The core program also develops and tests models that predict the global and regional climate change induced by increasing atmospheric concentrations of CO_2 and other greenhouse gases. This includes modeling climate change, with emphasis on the coupled climate system of the atmosphere, ocean and cryosphere. A key element is support of the Program for Climate Model and Diagnosis and Intercomparison which engages virtually every climate modeling group in the world. The CORE program is being enhanced to address global change impacts and core research associated with SUSTAINABLE DEVELOPMENT.

Research on plant response to increasing CO_2 concentrations contribute to environmental sustainability. Emphasis is placed on plant carbon metabolism to address basic biological mechanisms that affect direction, rate and magnitude of CO_2 fixation by land ecosystems. This research contributes unique data for assessment of global change impact on ecosystems and contributes important information on sustainable environmental quality.

The Information and Integration activity operates the ORNL Carbon Dioxide Information Analysis Center including its operation as a World Data Center under the United Nations auspices. The Center conducts quality audits on global and regional data sets and makes the data sets available to global change researchers and policy makers.

The Atmospheric Radiation Measurement activity (ARM) determines the radiation balance from the surface of the Earth to the top of the atmosphere and the atmospheric characteristics responsible for this balance, improves the parameterization of the formation and evolution of clouds in climate models, creates an experimental testbed for testing process models used in general circulation models (GCMs) and supports satellite ground truth measurements. The research involves a network of ground-based remote sensing instruments as well as campaign studies using aircraft and tethered platforms. ARM focuses on quantitative links between greenhouse gases and climate change and examines climate feedbacks and energy fluxes in the coupled land/atmosphere/ocean system. The research also examines atmospheric cycling and transformation of radiatively and chemically important trace species.

The Computer Hardware, Advanced Mathematics and Model Physics (CHAMMP) activity accelerates and improves prediction of the response of global and regional climates to the increasing atmospheric concentration of CO_2 and other greenhouse gases. Developing advanced climate models requires a better theoretical foundation for long term climate prediction and computers capable of increasing throughput by a factor of at least 10,000 over 1990 era models, as well as mathematical formulations and software that use parallel processing and improved algorithms.

The Oceans Research activity conducts a global survey of CO_2 in the ocean to improve ocean circulation models used for climate research. The research involves integrated laboratory, observational, and modeling studies to understand mixing, transport processes and carbon cycling in the ocean and the exchange of heat and carbon between the ocean and the atmosphere. The activity is focused on central questions concerning the

I. Carbon Dioxide Research (Cont'd)

rates of carbon and heat transport in the ocean, and changes in the oceanic CO_2 reservoir.

The Quantitative Links program was phased out in FY 1995. The research was designed at initiation to be completed within 5 years. The products of the Quantitative Links program contributed to increased understanding of cloud radiative properties (now explored within ARM) and data analyses have fed into the international assessments.

The National Institute for Global Environmental Change (NIGEC) provides support for research through six regional academic centers on the highest priority areas in DOE's Global Change Research, including regional and global climate modeling, greenhouse gas sources and sinks, and impacts on regional ecosystems of climatic and atmospheric changes, and the development of models and approaches for assessing the integrated impacts of and responses to climate change.

Unmanned Aerospace Vehicles (UAVs) will be used in support of the ARM Program and other process-oriented studies of environmental change. UAVs are needed to extend the ARM energy balance and cloud data to regional scales and to investigate processes not accessible by ground facilities.

The Integrated Assessment Research activity (previously titled Economics) will expand to respond to an Office of Science and Technology Policy request for better links between the natural sciences in the USGCRP and policy needs. The integrated assessment models will help evaluate benefits and costs of various policy alternatives as measured in a broad economics context, including parameters that cannot be converted to dollars. Results from the research on technology innovation and diffusion and greenhouse gas damage indices sponsored by the program will be integrated into the assessment process.

The Global Change Education activity will maintain the fellowship program that provides 4 years of tuition, fees, and support for graduate students and 2 years of support for post-doctoral positions. Special emphasis will also be given to involving students in ongoing research at national laboratories to achieve practical experience in the multi-disciplinary sciences of global change. Such environmental education directly supports long-term needs for SUSTAINABLE DEVELOPMENT. Presently, the Global Change Educational Program is supporting 26 postdoctoral fellows conducting research at 21 different DOE, university, and other federal agency laboratories, and the education and training of 52 graduate students at 31 different universities including Historically Black Colleges and Universities.

II. A. Summary Table: Carbon Dioxide Research

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Core Program	$ 15,996	$ 21,823	$ 23,435	$ 1,612
Information & Integration	2,132	1,899	2,033	134
Computer Hardware, Advanced Mathematics and Model Physics (CHAMMP)	10,470	10,267	10,857	590
Quantitative Links	4,257	2,032	0	-2,032
Atmospheric Radiation Measurement (ARM)	29,847	28,285	29,687	1,402
Oceans Research	5,116	4,427	4,469	42
National Institute for Global Environmental Change (NIGEC)	10,537	11,270	11,000	-270
Unmanned Aerospace Vehicles	0	1,000	1,000	0
Global Change Integrated Assessment Research	2,461	3,319	3,319	0
Education	2,733	2,526	2,600	74
Total, Carbon Dioxide Research	$ 83,549	$ 86,848	$ 88,400	$ 1,552

II. B. Laboratory and Facility Funding Table: Carbon Dioxide Research

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 1,154	$ 834	$ 850	$ 16
Brookhaven National Lab	2,619	2,038	2,030	-8
Environmental Measurements Lab	403	415	415	0
Lawrence Berkeley Lab	672	342	0	-342
Lawrence Livermore National Lab	6,056	6,170	5,825	-345
Los Alamos National Laboratory	3,838	4,341	4,120	-221
Oak Ridge Institute for Science & Education	3,131	2,826	2,900	74
Oak Ridge National Lab	6,125	5,159	4,800	-359
Pacific Northwest Lab	22,442	19,053	19,958	905
Sandia National Laboratories	291	1,335	1,400	65
All Other	36,818	44,335	46,102	1,767
Total, Carbon Dioxide Research	$ 83,549	$ 86,848	$ 88,400	$ 1,552

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Carbon Dioxide Research			
Core Program	Maintained continuity and quality assurance of atmospheric CO2 measurements at Mauna Loa Observatory; provided atmospheric CO2 projections derived from coupled atmosphere-ocean-terrestrial carbon cycle models; and analyzed effects of terrestrial carbon storage on atmospheric CO2 concentration.	Atmospheric CO2 projections derived from coupled atmosphere-ocean-terrestrial carbon cycle models will be provided; and analysis of the effects of terrestrial carbon storage on atmospheric CO2 concentration will be continued.	Atmospheric CO2 projections derived from coupled atmosphere-ocean-terrestrial carbon cycle models will be provided; and analysis of the effects of terrestrial carbon storage on atmospheric CO2 concentration will be continued. Research on terrestrial carbon processes is emphasized and enhanced. Greenhouse gas stabilization research contributes to SUSTAINABLE DEVELOPMENT.

III. Carbon Dioxide Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Core Program (Cont'd)	Continued the international comparison of models and observed natural variability of climate; operated model diagnostic center at Lawrence Livermore National Laboratory concentrating on increased model resolution using advanced modeling concepts such as nested fine model grids; developed advanced diagnostic techniques; analysis of traditional climate data used advanced statistical techniques to assess multi-variate climate change.	The comparison of international climate models will continue and the observed natural variability of climate will be investigated. The model diagnostic center at LLNL will concentrate on model to data comparisons and advanced diagnostic techniques will be applied. Advanced statistical techniques to assess multi-variate climate change will be undertaken.	The observed natural variability of climate will be investigated as a basis for detection of climate change. The model diagnostic center at LLNL will concentrate on the international model-to-data comparisons and developing and applying advanced diagnostic techniques. Coupled ocean and atmospheric modeling will commence and advanced statistical techniques to assess multi-variate climate change will be continued.
	Jointly with USDA, completed the first-phase experiment using the Free-Air-CO2-Enrichment (FACE) approach to determine the combined effects of CO2 and water stress on vegetation. Continued field and laboratory experiments to determine the role of CO2 concentration and other key environmental variables in photosynthesis, respiration and growth processes of plants. Emphasized mechanisms that remove CO2 from the atmosphere.	The FACE experiments, in a forest ecosystem, to determine combined effects of CO2 and climate on vegetation will continue and process models of the terrestrial carbon cycle will be developed.	The FACE experiments, in a forest ecosystem, to determine combined effects of CO2 and climate on vegetation will continue. Mechanisms that remove CO2 from the atmosphere will be emphasized and development of process models of the terrestrial carbon cycle will be continued.
	$ 15,996	$ 21,823	$ 23,435
Information & Integration	Operated the ORNL Carbon Dioxide Information Analysis Center including preparations to become a World Data Center under United Nations (UN) auspices. Conducted quality audits on global and regional data sets.	The ORNL Carbon Dioxide Information Analysis Center will be fully supported including the new role of the Center as the World Data Center for Geophysical Data under UN auspices. Quality audits on global and regional data sets will be conducted.	The ORNL Carbon Dioxide Information Analysis Center will be fully supported as a World Data Center for Geophysical Data under UN auspices. Quality audits on global and regional data sets will be conducted.
	$ 2,132	$ 1,899	$ 2,033

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III. Carbon Dioxide Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Computer Hardware, Advanced Mathematics and Model Physics (CHAMMP)	Implemented climate models and executed simulations on massively-parallel scientific supercomputers that achieve throughput speeds 100 times greater than was possible in 1990 on a conventional vector supercomputer. Conducted simulations and analytical studies to further define the theoretical limits to climate predictability. Continued development of new algorithms that better utilize massively parallel architectures in conjunction with the High Performance Computing and Communications Program.	Climate model simulations on massively-parallel scientific supercomputers will be executed and throughput speeds 100 times greater than was possible in 1990 on a conventional vector supercomputer will be achieved. Development of new algorithms that better optimize climate model performance will continue to build a massively parallel coupled atmosphere-ocean-land-ice climate model. Multi-decade simulations of climate change will be executed to probe the potential of century scale climate prediction. Algorithms that utilize massively parallel architectures will be improved in conjunction with the High Performance Computing and Communications Program.	Coupled climate system models on massively-parallel scientific super-computers will be refined to capitalize on continuing computational improvements. These models will form part of a national earth-system model infrastructure and will be executed to understand decade-to-century climate change and variability. Theories of greenhouse gas warming and climate behavior on century time scales will be rigorously tested with more complete models. Estimates of model uncertainty to greenhouse gas forcing will be critically evaluated.
	$ 10,470	$ 10,267	$ 10,857
Quantitative Links	Completed experimental studies to detect and quantitatively link increasing atmospheric concentrations of radiatively active trace gases.	The analyses of the experimental studies to detect and quantitatively link increasing atmospheric concentrations of radiatively active trace gases to climate change will be completed.	No activity.
	$ 4,257	$ 2,032	$ 0
Atmospheric Radiation Measurement (ARM)	Increased ARM operation consistent with planned program growth. Conducted major campaigns at the first site in conjunction with USGCRP partners and other national and international interests. Continued preparation of the second and third ARM sites, in the tropical western Pacific ocean region and in the north slope region of Alaska.	Operations at the first ARM site at the Oklahoma-Kansas border will continue. ARM operations at the second ARM site will begin by deploying two transportable Atmospheric Radiation and Cloud Station (ARCS) in the Tropical Western Pacific Ocean locale. Measurement campaigns at each of the two ARM sites in conjunction with USGCRP partners and other national and international collaborators will be conducted. The level of effort in applying ARM data to test and improve	Operations at the first ARM site at the Oklahoma-Kansas border will continue. ARM operations at the second ARM site will intensify by deploying a third and fourth transportable Atmospheric Radiation and Cloud Station (ARCS) in the Tropical Western Pacific Ocean locale. Measurement campaigns at each of the two ARM sites in conjunction with USGCRP partners and other national and international collaborators will be conducted. The level of effort in applying ARM data to test and improve

III. Carbon Dioxide Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Atmospheric Radiation Measurement (ARM) (Cont'd)		cloud radiation parameterizations in global climate models will be expanded. Preparations for the third ARM site on the North Slope of Alaska will be delayed.	cloud radiation parameterizations in global climate models will be expanded. Preparations for the third ARM site on the North Slope of Alaska will continue with completion of the environmental assessment.
	$ 29,847	$ 28,285	$ 29,687
Oceans Research	Continued ocean measurements as part of the global survey of CO2 in the oceans including the Indian Ocean; conducted process modeling including deep convection and the surface mixed layer to understand the exchange of heat and carbon with the atmosphere including role of ocean white caps in ocean/atmosphere exchange of carbon.	Ocean measurements as part of the global survey of CO2 in the oceans including the Indian Ocean will continue; process modeling including deep convection and the surface mixed layer to understand the exchange of heat and carbon with the atmosphere will be conducted; the study of ocean white caps in ocean/atmosphere exchange of carbon to include at-sea experiments will be enhanced.	As part of the World Ocean Circulation Experiment, ocean measurements as part of the global survey of CO2 in the oceans including the Indian Ocean will continue. Process modeling including deep convection and the surface mixed layer to understand the exchange of heat and carbon with the atmosphere will be conducted. The study of ocean white caps in ocean/atmosphere exchange of carbon will include at-sea experiments.
	$ 5,116	$ 4,427	$ 4,469
National Institute for Global Environmental Change (NIGEC)	NIGEC continued to support the highest priority research areas in global and regional climate prediction and in determining the potential consequences of human-induced climatic and atmospheric changes. Support for research funded through the six Regional Centers of NIGEC and its central office focused on global and regional climate predictions, sources and sinks of carbon dioxide, and the consequences of atmospheric and climatic changes on terrestrial ecosystems at regional and sub-regional sections.	NIGEC will continue to support the highest priority research areas in DOE's global change research program including integrated assessment. Support for research funded through its six Regional Centers will focus particularly on identifying the unmanaged and managed ecological systems that are most vulnerable to potential climatic changes and characterizing and quantifying the consequences of climatic and atmospheric changes on these systems. NIGEC will also support research to improve integrated assessments of the economic, social, and environmental consequences of climate change, to quantify the role of terrestrial	NIGEC will continue to support the highest priority research areas in DOE's global change research program including integrated assessment. Support for research funded through its six Regional Centers will focus particularly on identifying the unmanaged and managed ecological systems that are most vulnerable to potential climatic changes and characterizing and quantifying the consequences of climatic and atmospheric changes on these systems. NIGEC will also support research to improve integrated assessments of the economic, social, and environmental consequences of climate change, to quantify the role of terrestrial

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III. Carbon Dioxide Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
National Institute for Global Environmental Change (NIGEC) (Cont'd)		ecosystems as a sink of source of carbon dioxide, to improve regional and global climate predictions, and to determine the radiative effects of clouds and aerosols.	ecosystems as a sink of source of carbon dioxide, to improve regional and global climate predictions, and to determine the radiative effects of clouds and aerosols.
	$ 10,537	$ 11,270	$ 11,000
Unmanned Aerospace Vehicles	Available UAVs were instrumented and flown in support of ARM-CART (cloud and radiation testbed) program using funds from the Department of Defense Strategic Environmental Research and Development Program. First flights were engineering tests at Edwards Air Force Base with Air Force support. A spring campaign over the CART site in Oklahoma provided the first climate relevant data from a UAV. NASA tested an advanced UAV for DOE use under an MOA calling for data sharing and cooperative activity between NASA and DOE.	The use of available leased UAVs and instrumentation developed under the DoD Strategic Environmental Research and Development Program (SERDP) will continue to support ARM and other DOE and multi-agency programs. DOE and SERDP support will allow participation in measurement programs designed to answer long standing questions on the role of deep convection and the limit found in the temperature maxima of the warm pool of the Western Pacific. Opportunities for interagency cooperation will be explored. Instrument development funded by SERDP will continue to improve the measurement capability of these platforms for DOE use.	As the SERDP UAV instruments mature they will be test flown. With these DOE funds initial operations for data collection will be conducted. Operations planned include examination of the earth radiation flux profile with two UAVs for simultaneous observations and an exploration of maritime stratus effects to prepare for operations in support of the ARM North Slope of Alaska site. The SERDP instrument development phase of the ARM-UAV program will begin winding down in anticipation of DOE operations taking over the ARM-UAV program. Interagency collaboration will continue to provide strong leverage for utility of data from the UAV program.
	$ 0	$ 1,000	$ 1,000
Global Change Integrated Assessment Research	Multi-year research grants initiated in FY 1993 continued in FY 1994 to investigate two primary topics. The first is the influence of technology innovation and diffusion on all aspects of the economics of global change to improve the formulation of integrated assessments (benefit/cost analyses). The second is research to develop an alternative to Global Warming Potential greenhouse gas indices so that the regulatory process will have a rationale for regulating the different	The Integrated Assessment Research Program will undergo a major expansion in FY 1995 in part as a response to requests by the Executive Office of the President for the USGCRP to better link the natural science research to the policy process through a more intensive integrated assessment effort. The biggest change in 1995 will be the addition of direct support of integrated assessment. In FY 1993 and FY 1994, the IARP (previously titled Economics Research Program) funded	Efforts assist in translating the results from the other research areas into a policy-relevant framework. The program will support integrated assessment efforts, primarily those that are modeling the benefits and costs of policies to mitigate and adapt global climate change. Initiate analysis of larger modeling efforts. Research will be aimed at testing these first full results, at comparing the models, and at identifying important items that the models lack, such as

III. Carbon Dioxide Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Global Change Integrated Assessment Research (Cont'd)	greenhouse gases simultaneously. New research was also undertaken in FY 1994 to extend the new knowledge gained from the current integrated assessment activity, to support further integrated assessment, and to develop and prepare to analyze National Action Plans required by the "Rio Conference." Research included such topics as the fundamental economic driving forces, for instance international economic forecasts, population growth, international trade, impacts of climate change, and economic tradeoffs between generations.	research, such as predicting technology innovation and diffusion, that assists integrated assessment by providing a foundation for specific parts of the analysis. This background research on specific topics will evolve through 1995, perhaps to include quantifying the impacts of potential global climate change on the energy sector and on ecosystems. However, the major change in FY 1995 is the additional emphasis on the development of integrated assessment itself, which will include a balanced support of both the relatively few large global models as well as other modes of analysis, such as regional models and specific analyses.	realistic approximations (reduced form models) of various physical, economic, and socio-economic processes. The program will also identify critical research topics that support the assessment efforts. Topics for investigation include predicting the effectiveness of voluntary actions, the impact of potential climate change on vulnerable sectors, such as unmanaged ecosystems, and valuing the mitigation and adaptation options with reference to the ultimate impacts.
	$ 2,461	$ 3,319	$ 3,319
Education	Maintained tuition and stipend support for training the next generation of energy-related global change scientists. Awarded new graduate-and-postdoctoral-level fellowships to replace ones that have been completed or terminated.	New graduate- and postdoctoral-level fellowships will be awarded to replace ones that have been completed or terminated. The 4-year tuition and stipend support to about 50 graduate students and 2-year research support to about 20 post-doctoral fellows will be maintained. The research experience "practicums" of the graduate-level fellows at the DOE national Laboratories to provide better opportunities for the Fellows to interact with the multidisciplinary staff and state-of-the-art equipment at our labs will be enhanced. A Global Change awards program for faculty and students at Historic Black Colleges and Universities will be initiated.	The number of graduate-level fellowships will be about 35 and includes support for faculty-student awards at Historically Black Colleges and Universities (HBCUs). Support for undergraduate scholarships at HBCUs will increase. Modification of the graduate-level fellowship program to provide 4 years of DOE support over a span of 5 years will be completed in order to provide leveraged support for DOE Fellows from respective universities. The number of postdoctoral-level fellowships will be about 17. An evaluation of the success of both fellowship programs at providing the training and cross-disciplinary skills necessary for conducting global change research will be conducted. Other mechanisms for supporting the science-infrastructure needs of young scientists at research institutions, will be evaluated.

III. Carbon Dioxide Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Education (Cont'd)	Funding in the amount of $1,225,000 and $40,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $1,691,000 and $85,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $1,760,000 and $132,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 2,733	$ 2,526	$ 2,600
Carbon Dioxide Research	$ 83,549	$ 86,848	$ 88,400

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

I. Preface: Biological and Environmental Research Program Direction

This subprogram provides the Federal staffing resources and associated funding needed to plan, direct, manage, and support a comprehensive multidisciplinary research effort designed to understand the long-term health and environmental effects associated with the development and use of various energy technologies, and to utilize the Department's unique resources to solve major scientific problems in biology, medicine, and environmental science. This staff will help to meet national energy goals of promoting health and safety as well as a clean environment through management of basic research, providing the scientific framework for a sound national energy policy for fossil fuel and radioactive emissions, fostering partnerships for sharing and leveraging resources, promoting the development of a trained and diverse scientific workforce, and maintaining U.S. world competitiveness through advances in biotechnology.

II. A. Summary Table: Biological and Environmental Research Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 4,360	$ 4,867	$ 4,988	$ 121
Personnel Benefits	984	1,118	1,147	29
Travel	555	530	530	0
Contractual Services	990	985	935	-50
Total, Biological and Environmental Research Program Direction	$ 6,889	$ 7,500	$ 7,600	$ 100

II. B Laboratory and Facility Funding Table: Biological and Environmental Research Program Direction

All Other	$ 6,889	$ 7,500	$ 7,600	$ 100
Total, Biological and Environmental Research Research Program Direction	$ 6,889	$ 7,500	$ 7,600	$ 100

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Biological and Environmental Research Program Direction			
Personnel Compensation	Provided funds for personnel compensation for 60 full-time equivalents (FTEs) in the Office of Health and Environmental Research and for related program and management support. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards.	Provide funds for personnel compensation for 62 FTEs. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards.	Provide funds for personnel compensation for 62 FTEs. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards. Provide for pay increases resulting from normal within-grade increases, locality and/or general pay raises.
	The Office of Health and Environmental Research provided program management, oversight, guidance and support for over 850 active research projects (reviewing and evaluating many more throughout the proposal selection process) and conducted major reviews of numerous BER-sponsored programs at laboratories and universities. Supported and provided liaison for ongoing research activities including growth in the areas of atmospheric science (ozone) and subsurface microbiology, structural biology, the human genome, and global climate change programs; provided for the added reporting and analysis requirements of the Energy Policy Act; supported the Strategic Environmental Research and Development Program (SERDP) industrial energy and waste minimization efforts; supported SBIR and the ER Laboratory Technology Transfer Program for the cost shared spinoff CRADAs from non-defense laboratories; and increased support for the Environmental Molecular Sciences Laboratory (EMSL). Managed efforts in analytical technology, health and environmental effects of radiation and toxic chemicals, and	Continue program management for ongoing activities as in FY 1994. Support increased emphasis on information infrastructure for structural biology and genetics, advanced sequencing and high resolution mapping of the human genome, new efforts on the microbial genome for industrial and waste cleanup applications, and global climate change programs. Manage efforts in atmospheric science, subsurface microbiology, and ecosystem research. Manage efforts in analytical technology, health and environmental effects of radiation and toxic chemicals, and molecular nuclear medicine, boron neutron capture therapy, including development of a new initiative in advanced biomedical technology to exploit dual use resource capabilities with Defense Programs and Department of Defense programs. Continue to provide ES&H oversight for the safe operation of program facilities. Provide program management, oversight and accountability of contractor operations, including ongoing construction activities for Structural Biology Centers at ANL and LBL, the LBL Human Genome Laboratory,	Continue program management for ongoing activities as in FY 1995. Support increased emphasis on new initiatives in computational biology to link advances in biological sciences with computer and information services; field-scale experiments in partnerships with EM to evaluate in-situ microbial and chemical processes for immobilizing and transforming subsurface contaminants as a cost-effective bioremediation technology option; pilot-scale sequencing and high resolution mapping of the human genome; expanding efforts on the microbial genome for industrial and waste cleanup applications; and global climate change programs. Manage efforts in atmospheric science, subsurface microbiology, and ecosystem research. Manage efforts in analytical technology, health and environmental effects of radiation and toxic chemicals, and molecular nuclear medicine. Support a new initiative in advanced biomedical technology to exploit the potential of dual use capabilities of biological sensors, lasers and imaging technologies for improved health care practices.

III. Biological and Environmental Research Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	molecular nuclear medicine. Provided environment, safety and health (ES&H) management capability for the safe operation of program facilities. Continued to oversee contractor operations and accountability including new construction activities for Structural Biology Centers at Argonne National Laboratory (ANL) and Lawrence Berkeley Laboratory (LBL), the LBL Human Genome Laboratory, the EMSL at the Pacific Northwest Laboratory (PNL), and the upgrade of the Brookhaven Linac Isotope Producer at Brookhaven National Laboratory (BNL). Continued liaison with other DOE programs to facilitate technology and information transfer, and with other Federal agencies and international bodies.	and EMSL at PNL. Continue liaison with other DOE programs to facilitate technology and information transfer, and with other Federal agencies and international bodies. Manage program development for enhancing future manpower in health and environmental sciences including newly funded programs for HBCUs. Meet growing responsibilities with respect to the TQM process and oversight of new partnerships between the national laboratories, academia, and the private sector.	Provide program management, oversight and accountability of contractor operations, including ongoing construction activities for Structural Biology Centers at ANL and LBL, the LBL Human Genome Laboratory, and EMSL at PNL. Continue liaison with other DOE programs to facilitate technology and information transfer, and with other Federal agencies and international bodies. Manage program development for enhancing future manpower in health and environmental sciences including the new scholarship programs for HBCUs. Continue to support TQM processes and new partnerships with others.
	Provided program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, information resource management, policy review and coordination, and utilities management.	Continue program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, information resource management, policy review and coordination, and utilities and construction management.	Continue program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, information resource management, policy review and coordination, and utilities and construction management.
	$ 4,360	$ 4,867	$ 4,988
Personnel Benefits	Funded civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 984	$ 1,118	$ 1,147

III. Biological and Environmental Research Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Travel	Provided funds for official domestic, international, and local travel. Funds transferee/new hire permanent change of station transportation.	Provide funds for official domestic, international, and local travel. Fund transferee/new hire permanent change of station transportation.	Provide funds for official domestic, international, and local travel. Fund transferee/new hire permanent change of station transportation.
	$ 555	$ 530	$ 530
Contractual Services	Provided a variety of program support such as printing and editing and contractual services, including, for example, ES&H support and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.	Continue at a reduced level a variety of program support such as printing and editing and contractual services, including, for example, ES&H support and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.	Continue at a reduced level a variety of program support such as printing and editing and contractual services, including, for example, ES&H support and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.
	$ 990	$ 985	$ 935
Biological and Environmental Research Program Direction	$ 6,889	$ 7,500	$ 7,600

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

I. Preface: Facilities Operations

Facility operations provide for the necessary capital equipment and construction needs to support the BER program and the Pacific Northwest Laboratory landlord responsibilities. An ability to address health and environmental issues requires a continuing commitment to maintaining advanced instrumentation and facilities.

II. A. Summary Table: Facilities Operations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capital Equipment	$ 20,957	$ 24,540	$ 24,000	$ -540
Construction	47,482	70,700	67,045	-3,655
Total, Facilities Operations	$ 68,439	$ 95,240	$ 91,045	$ -4,195

II. B. Laboratory and Facility Funding Table: Facilities Operations

Ames Lab	$ 0	$ 79	$ 0	$ -79
Argonne National Lab (East)	4,454	7,215	4,684	-2,531
Brookhaven National Lab	7,984	3,002	1,984	-1,018
Environmental Measurements Lab	194	250	200	-50
Inhalation Toxicology Research Institute	762	177	600	423
Lab of Radiobiology and Environmental Health	97	150	100	-50
Lawrence Berkeley Lab	5,316	23,640	11,474	-12,166
Lawrence Livermore National Lab	1,238	1,325	1,363	38
Los Alamos National Laboratory	534	2,043	1,168	-875
Oak Ridge Institute for Science & Education	0	0	0	0
Oak Ridge National Lab	1,020	100	742	642
Pacific Northwest Lab	43,407	49,203	62,600	13,397
Stanford Synchrotron Radiation Lab	2,911	2,003	500	-1,503
All Other	522	6,053	5,630	-423
Total, Facilities Operations	$ 68,439	$ 95,240	$ 91,045	$ -4,195

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facilities Operations			
Capital Equipment	Maintained capital equipment budget for the core program to provide state-of-the-art instrumentation. ($6,130)	Reduces capital equipment budget for the core program to provide state-of-the-art instrumentation. ($3,184)	Supports capital equipment needs for the core program to provide state-of-the-art instrumentation. ($3,400)
	Completed development and fabrication of x-ray microscopes (scanning and imaging) at the ALS begun in FY 1993 (TEC $4.1M); initiated development of beam line 9 at SSRL with stations for all major x-ray technologies needed for structural biology (TEC $7.5M); initiated development of a new station at the HFBR for high-speed neutron crystallography (TEC $2.9M); funded final stage of upgrade of existing stations at NSLS (TEC $1.0M). ($5,345)	Complete development of beamline 9 at SSRL with four stations for structural biology experiments. Complete development of elliptically polarized wiggler beamline for spectroscopy at the ALS. Continue development of experimental stations for crystallography and x-ray microscopy at ALS and a new station for neutron crystallography at the Brookhaven HFBR; upgrade detector and data management hardware at existing stations. ($8,799)	Complete development of beamline for crystallography at the ALS and station for neutron crystallography at the Brookhaven HFBR; initiate modernization of computer systems at Brookhaven National Laboratory, Argonne National Laboratory, Lawrence Berkeley Laboratory and Stanford Synchrotron Radiation Laboratory structural biology user facilities. ($8,100)
	Supported genome needs for replacement of capital equipment to maintain existing capability. ($2,066)	Supports genome needs for replacement of capital equipment to maintain existing capability. ($2,666)	Supports genome needs for replacement of capital equipment to maintain existing capability. ($2,800)
	Supported capital equipment needs for global climate change including the ARM needs. Among the latter are (1) equipment for Southern Great Plains ARM site particularly high accuracy radiometers, state-of-the-art high resolution spectrometers, and high resolution LIDAR and Radar systems for aerosol, cloud and water vapor diagnostics, (2) remote cloud measurement systems for the ARM Tropical Western Pacific site; these are instrument packages containing surface radiometers, cloud imagers and water vapor profilers. Funds were also provided for a measurement Data Archive System at ORNL; capital for this included hardware for a high speed data processing and storage capability. ($7,416)	Supports capital equipment needs for global climate change, primarily ARM by: (1) upgrading and/or replacing selected instrumentation at the first ARM site, in Oklahoma-Kansas, (2) providing two transportable Atmospheric Radiation and Cloud Stations (ARCS) at the second ARM site, in the Tropical Western Pacific Ocean locale and (3) continued development of the ARM Data Archive System at ORNL. ($9,891)	Supports capital equipment needs for global climate change, primarily ARM by: (1) providing two transportable Atmospheric Radiation and Cloud Stations (ARCS) at the third ARM site, in the North Slope region of Alaska and 2) three additional ARCS for the second ARM site, in the tropical western Pacific locale. ($9,300)

III. Facilities Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	No activity.	No activity.	Supports capital equipment needs for new initiative in advanced biomedical science and technology. ($400)
	$ 20,957	$ 24,540	$ 24,000
Construction	Maintained general plant projects at the FY 1993 funding level. ($3,047)	Maintains general plant projects at the FY 1994 funding level. ($3,500)	Maintains general plant projects at the FY 1995 funding level and supports high priority ES&H activities. ($4,450)
	Initiated construction of user center for structural biology at Advanced Light Source at LBL, containing laboratories for sample preparation, characterization and storage, offices for permanent staff of beamlines and for visitors, and computer facilities needed for evaluating data obtained at ALS. The center will occupy a portion of the mezzanine of the ALS, as well as the adjacent Building 80. ($582)	Continue construction of user center for structural biology at ALS, containing laboratories for sample preparation, characterization and storage, offices for permanent staff of beamlines and for visitors, and computer facilities needed for evaluating data obtained at ALS. The center will occupy a portion of the mezzanine of the ALS, as well as the adjacent Building 80. ($4,700)	Complete construction of user center for structural biology at ALS, containing laboratories for sample preparation, characterization and storage, office for permanent staff of beamlines and for visitors, and computer facilities needed for evaluating data obtained through ALS. The center will occupy a portion of the mezzanine of the ALS, as well as the adjacent Building 80. ($2,600)
	Initiated construction of the Structural Biology Center at ANL, including new laboratories and experimental facilities at the Synchrotron Radiation Source and substantially remodeled laboratories and a biohazard containment facility in Building 202 (Biology) at ANL. This project will result in a high-throughput advanced technology center for x-ray crystallography serving the entire U.S. structural biology community. ($3,881)	Continue construction of the Structural Biology Center at ANL, including new laboratories and experimental facilities at the Synchrotron Radiation Source and substantially remodeled laboratories and a biohazard containment facility in Building 202 (Biology) at ANL. This project will result in a high-throughput advanced technology center for x-ray crystallography serving the entire U.S. structural biology community. ($6,700)	Complete construction of the Structural Biology Center at ANL, including new laboratories and experimental facilities at the Synchrotron Radiation Source and substantially remodeled laboratories in Building 202 (Biology) at ANL. This project will result in a high-throughout advanced technology center for x-ray crystallography serving the entire U.S. structural biology community. ($4,295)

III. Facilities Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction (Cont'd)	Continued support, provided previously by the Environmental Management program, for construction of the Environmental Molecular Science Laboratory (EMSL) to provide a focused laboratory capability for developing technology solutions to Hanford site-specific environmental restoration and waste management problems for the full duration of site clean-up. The EMSL will focus on a wide variety of experimental and theoretical capabilities in an interdisciplinary culture that will: (1) develop the scientific basis to predict contaminant transport and transformation; (2) advance materials technologies for measurement, containment, and separation of wastes; (3) increase use of biosystems for remediation and knowledge of health effects due to toxic substances; (4) facilitate training, education, and technology transfer initiatives; and (5) achieve transfer of technology through industry involvement. The facility size is approximately 200,000 square feet, housing 209 permanent scientific and support staff, and 60 visiting scientists. Key facility elements include laboratories, offices, conference rooms, computer rooms, library, kitchen, support shops, and a seminar area. Facility design will support state-of-the-art laboratory equipment, provide flexibility to accommodate future equipment, and support educational and technology transfer initiatives. ($32,017)	Continue support for construction of the EMSL to provide a focused laboratory capability for developing technology solutions to Hanford and other DOE site-specific environmental restoration and waste management problems for the full duration of site clean-up. The EMSL will focus on a wide variety of experimental and theoretical capabilities in an interdisciplinary culture that will: (1) develop the scientific basis to predict contaminant transport and transformation; (2) advance materials technologies for measurement, containment, and separation of wastes; (3) increase use of biosystems for remediation and knowledge of health effects due to toxic substances; (4) facilitate training, education, and technology transfer initiatives; and (5) achieve transfer of technology through industry involvement. The facility size is approximately 200,000 square feet, housing 209 permanent scientific and support staff, and 60 visiting scientists. Key facility elements include laboratories, offices, conference rooms, computer rooms, library, kitchen, support shops, and a seminar area. Facility design will support state-of-the-art laboratory equipment, provide flexibility to accommodate future equipment, and support educational and technology transfer initiatives. ($40,000)	Continue support for construction of the EMSL to provide a unique laboratory facility focused on fundamental science needed to advance technology for environmental restoration/waste management at Hanford and other DOE sites. The EMSL will unite experts in a variety of scientific disciplines and focus their efforts on (1) first predicting and then remediating contaminant transport and transformation; (2) development of advanced materials necessary for evaluation and separation of complex wastes, materials that will have a variety of industrial uses; (3) increased use of biotechnology for remediation; (4) evaluation of toxic substances on human (and environmental) health, including development of methodologies of wide applicability in the biotechnology industry; (5) achieve transfer of technology through industry involvement and directly contributes to SUSTAINABLE DEVELOPMENT. The EMSL will be a National User Facility; academic and industrial scientists will work in collaboration with in-house staff; additionally, academic and industrial scientists will have access to the unique equipment to be housed in the EMSL. ($50,000)

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III. Facilities Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction (Cont'd)	Lack of a continuous supply of some radioisotopes has caused concern throughout the nuclear medicine clinical community because vital diagnostic technology was not available for patient studies, and important biomedical research activities were also affected. The Brookhaven Linac Isotope Producer is a cost effective and rapid means of resolving much of this radioisotope shortfall. The upgrade will increase the beam current of the existing facility by a factor of three, replace the target assembly and improve the hot cell shielding in order to substantially enhance the radioisotopes production capability. Two years will be required to complete the upgrade. ($5,821)	Complete upgrade.	No activity.
	Initiated construction of the Human Genome Laboratory at LBL to provide a state-of-the-art facility for molecular genetics research. The three story building will provide 41,000 gross square feet and 24,050 net square feet of assignable laboratory and office space. The Laboratory will provide an essential core of laboratories for multidisciplinary teams of technical staff that utilize a common pool of instrumentation and cell culture facilities. This building will be adjacent to existing cell biology research facilities that are used for related research on gene expressions and physiology. This and other light laboratory space at LBL is now fully utilized. The Human Genome Laboratory is planned for a staff of 92, including senior scientists, postdoctoral associates, graduate students, technicians and support personnel. Research at the Human Genome Laboratory will directly support the needs of the	Continue construction of the Human Genome Laboratory at LBL to provide a state-of-the-art facility for molecular genetics research. ($15,800)	Continue construction of the Human Genome Laboratory at LBL to provide a state-of-the-art facility for molecular genetics research. ($5,700)

III. Facilities Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction (Cont'd)	DOE Biological and Environmental Research program for gene mapping and DNA base sequencing and its related efforts to improve analytical methods, instrumentation and information management. Such efforts will provide a fundamental understanding of the structure and function of the human genome--the genetic basis of susceptibility to disease causing agents--for use in defining risk and providing health protection. ($2,134)		
	$ 47,482	$ 70,700	$ 67,045
Facilities Operations	$ 68,439	$ 95,240	$ 91,045

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IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unappropriated Balance
GPE-120	General Plant Projects	---	---	$3,047 b/	$3,500	$4,450	---
94-E-339	Human Genome Laboratory, LBL	24,634	0	2,134	15,800	5,700	1,000
94-E-338	Structural Biology Center, ANL	14,876	0	3,881	6,700	4,295	0
94-E-337	ALS Structural Biology Support Facilities, LBL	7,882	0	582	4,700	2,600	0
94-E-335	BLIP Facility Upgrade	5,821	0	5,821	0	0	0
91-EM-100	Environmental Molecular Sciences Lab., PNL	207,900	50,770 a/	32,017	40,000	50,000	35,113
Subtotal	Line Item Projects	261,113	50,770	44,435	67,200	62,595	36,113
Total Biological and Environmental Research		$XXX,XXX	$XXX,XXX	$47,482	$70,700	$67,045	$36,113

a/ $22,270 prior year funding and $28,500 FY 1993 funding provided by Environmental Management program.
b/ Includes general reduction for use of prior year balances of $70,000.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPE-120, General Plant Projects

TEC: $ 4,450
TPC: $ 4,450

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Obligations	Costs FY 1994	FY 1995	FY 1996	After FY 1996
Previous	XXXXXXXX	$ 1,539	$ 1,886	$ 1,006	$ 1,385
FY 1994 Projects	2,977	400	1,126	1,228	223
FY 1995 Projects	3,500	0	413	766	2,321
FY 1996 Projects	4,450	0	0	500	3,950

3. Narrative: The request supports minor new construction and other capital alterations to land, buildings, and utilities systems. In addition, the cost of installed equipment is included as an integral part of the general plant subprojects.

General plant projects are necessary to maintain facilities in an environmentally safe and health hazard free condition. They are also required to keep facilities in adequate repair, including roads, parking lots, pavements, etc. The BER program supports such activities as a landlord responsibility for the Pacific Northwest Laboratory and for other laboratories and universities. The FY 1996 General Plant Projects funding will also support high priority ES&H activities identified in the Department's ES&H Five Year Plan.

4. Total Project Funding (B/A):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ xxx	$ 3,047a/	$ 3,500	$ 4,450	$ XXX

a/ Includes general reduction for use of prior year balances of $70,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-339, Human Genome Laboratory
Lawrence Berkeley Laboratory
Berkeley, California

TEC: $ 24,634 a/
TPC: $ 24,934 a/

Start Date: 4th Qtr. FY 1995 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustment	Obligations	Costs
FY 1994	$ 2,200	-66a/	$ 2,134	$ 518
FY 1995	15,800	0	15,800	4,970
FY 1996	5,700	0	5,700	9,850
FY 1997	1,000	0	1,000	9,296

3. Narrative: The proposed laboratory will be a three-story building with 41,000 gross square feet and 24,050 net square feet of assignable laboratory and office space.

The Human Genome Laboratory at LBL will support the Department of Energy's program to develop and apply the powerful tools of molecular genetics towards understanding the health and environmental impacts of current and proposed energy technologies. Research conducted at the laboratory will provide a fundamental understanding of the structure and function of the human genome.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 2,134 a/	$15,800	$ 5,700	$ 1,000
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	170	130	0	0	0

a/ Reflects reduction of funding for FY 1994 rescission.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-338, Structural Biology Center
Argonne National Laboratory (ANL)
Argonne, IL

TEC: $ 14,876a/
TPC: $ 21,596a/

Start Date: 2nd Qtr. FY 1995 Completion Date: 2nd Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustment	Obligations	Costs
FY 1994	$ 4,000	-119a/	$ 3,881	$ 827
FY 1995	6,700	0	6,700	6,700
FY 1996	4,295	0	4,295	3,700
FY 1997	0	0	0	3,649

3. Narrative: The Structural Biology Center (SBC) proposes to develop and operate a sector of the 6-7 GeV as a user facility for macromolecular crystallography. The major portion of the SBC construction project will be to build two x-ray beamlines--one bending-magnet line and one insertion-device line--with their associated experimental hutches, ancillary instrumentation, and conventional facilities such as offices and laboratories.

Conventional facilities at the 6-7 GeV and in Building 202 will be built and operated to support crystal growth, mounting and alignment at ANL. A fully established biochemistry laboratory will be operated and staffed at ANL and will be available to outside users. A biohazards containment facility will be built and staffed at ANL so the user community can handle their materials as needed.

4. Total Project Funding (B/A):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 3,881a/	$ 6,700	$ 4,295	$ 0
Capital Equipment.....	0	0	0	200	400
Operating Expenses.....	843	780	830	1,072	2,595

a/ Reflects reduction of funding for FY 1994 rescission.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-337, ALS Structural Biology Support Facilities
Lawrence Berkeley Laboratory (LBL)
Berkeley, California

TEC: $ 7,882a/
TPC: $ 7,982a/

Start Date: 2nd Qtr. FY 1995 Completion Date: 3rd Qtr. FY 1996

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
FY 1994	600	-18a/	582	296
FY 1995	4,700	0	4,700	2,300
FY 1996	2,600	0	2,600	5,100
FY 1997	0	0	0	186

3. Narrative: The ALS Structural Biology Support Facilities will provide 11,100 gross square feet of support laboratories and offices, located in the ALS building and in an existing adjacent structure. The facilities will be designed and equipped to support activities in the areas of x-ray microimaging and microholography, x-ray spectroscopy, and x-ray crystallography.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 582a/	$4,700	$ 2,600	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	100	0	0	0	0

a/ Reflects reduction of funding for FY 1994 rescission.

IV. B. Construction Funded Project Descriptive Summary

1. Title and Location of Project: Project 91-EM-100, Environmental Molecular Sciences Laboratory
Pacific Northwest Laboratory
Richland, Washington

TEC: $207,900
TPC: $229,900

Start Date: 2nd Qtr. FY 1994 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation a/	Adjustment	Obligations a/	Costs
1991	$ 5,200	-30c/	$ 5,170	$ 1,500
1992	17,100 b/	0	17,100 b/	3,300
1993	28,500	0	28,500	12,800
1994	33,000	-983d/	32,017	26,282
1995	40,000	0	40,000	56,700
1996	50,000	0	50,000	68,200
1997	35,113	0	35,113	39,118
1998	0	0	0	0

3. Narrative: This facility is approximately 200,000 square feet, housing 209 permanent scientific and support staff and 60 visiting scientists. Facility design will support state-of-the-art laboratory equipment, provide flexibility to accommodate future equipment, and support educational and technology transfer initiatives.

This project will be a new laboratory facility with an initial complement of laboratory equipment. EMSL will be an extension of the current environmental mission at the Hanford site, providing a focused laboratory capability to develop technology solutions to site-specific environmental restoration and waste management problems for the full duration of site cleanup.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$50,770	$32,017	$40,000	$50,000	$ 35,113
Capital Equipment	2,320	2,670	0	0	0
Operating Expenses	6,500	2,050	1,400	2,300	4,760

a/ Funds provided by Environmental Management program for FY 1991 through FY 1993.
b/ Excludes $20,000,000 provided by the Department of Defense per the Defense Appropriation Act of FY 1991.
c/ Adjustment reflects a $30,000 general reduction.
d/ Reflects reduction of funding for FY 1994 rescissions.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

FUSION ENERGY

THE ENERGY CONTEXT

For the long-term, the Department of Energy is seeking to provide a portfolio of diverse energy sources. Fusion energy plays an important role in the Department's long-term energy strategy.

Because fusion energy is a long-range option, what the world might be like, how energy might be delivered, and the geopolitical stresses and opportunities must be considered in planning the program.

A growing world population is one factor to be considered. In the 1950's, when the possibility of fusion energy was first raised, the world population was 2.7 billion; in 1990 it was 5.3 billion. The United Nations projects that, by 2025, it will be 8.5 billion. Of this 8.5 billion, 84 percent, or a little over 7 billion people, will live in what are now the less developed nations.

If the people of the less developed countries are to raise their standard of living to that of the more developed countries, their use of energy must grow in all sectors. If the entire world consumed energy at the per capita rate of the inhabitants of the nations belonging to the Organization for Economic Cooperation and Development (OECD), total demand would increase by a factor of three. Without major investments in a diverse portfolio of clean technologies for electrical power generation, developing countries will be forced by economics to use energy and transportation technologies with negative national and global long-term environmental consequences. A mix of clean energy technologies, which may include fusion as well as renewable energy technologies, will be required to meet future national and world-wide environmental, energy and energy security needs. If electric vehicles become a major form of urban transport, this will only exacerbate the requirements for electric power generation. The issue of providing for energy demands in the third world is a matter of environmental stewardship, as well as social justice and equity. Without this recognition, major geopolitical imbalances that can affect the security of the developed world may occur. Striking the right balance offers an opportunity for trade for those nations which have developed clean, efficient technologies to provide electric power.

Domestically, the future is different. U.S. demand for energy has been reduced and significant continued reductions from conservation and renewables can be foreseen through the middle of the next century. Historically in the U.S., growth in electricity demand has been tied to the rate of economic growth. Until the 1970-80's, it outpaced the economy -- when the average annual growth in the Gross Domestic Product (GDP) was 2.7 percent, a 3.4 percent per year growth of electricity demand was seen. The most recent near-term forecasts of the Energy Information Administration show growth in electricity demand well below the projected annual GDP growth rates. This slower growth is due to energy efficiency, in both the supply and consumption sectors.

However, the need for new technology for domestic electrical power generation cannot be ignored. The development of electric vehicles may well contribute to increased demand for electricity in the next century. Replacement of existing electricity generation also offers opportunity for environmentally beneficial technology. Replacement of fossil fuel is environmentally appropriate and eventually required. The timing of the needs and the size of the demand are uncertain and depend on such things as population growth, economic activity, and legislative and regulatory changes.

WHY DEVELOP FUSION ENERGY TO MEET THE NEED?

Fusion energy is a virtually inexhaustible energy source. Fusion will produce the most energy per amount of fuel input of any known option, with only helium gas as a releasable byproduct. A pound of fusion fuel contains the energy equivalent of 12 million pounds of coal, 25 thousand

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barrels of oil, 142 million cubic feet of natural gas, or 4.5 pounds of fission fuel. Fusion will not release greenhouse gases associated with global warming or chemicals associated with acid rain, nor does it contribute to other forms of atmospheric pollution.

Fusion has the potential to ensure the safety of the public by limiting radioactive materials, that could be dispersed, and by assuring safe power plant shutdown under accident conditions without the need for active safety systems. No "runaway" nuclear accidents are possible in fusion power plants.

The fusion process does produce radioactivity in the structural materials in the power plant, but this environmental impact can be greatly reduced by using structural materials that minimize the long-term radioactive waste when they are subjected to the fusion process. The development of these "low-activation" materials" is becoming a priority in the fusion energy long-range development program.

PROGRAM SUCCESSES

The progress made by the fusion program toward the goal of developing fusion as a source of electricity has been steady since the beginning of the program in 1951. The results from the program are at the cutting edge of science and technology. The scientific discipline of plasma physics has been established by the fusion program because it forms the basis for fusion development. Plasma physics is now used in a variety of areas in addition to fusion. For example, the principles of plasma physics are used in understanding the near-earth space environment and its effects on communication. Plasma physics has made contributions to the establishment of many small businesses that have increased the base of highly skilled jobs in such diverse areas as the transmutation of toxic wastes, and manufacturing of computer chips.

The most recent success for the fusion program is the achievement of a scientific breakthrough at the Princeton Plasma Physics Laboratory's Tokamak Fusion Test Reactor (TFTR). Beginning about one year ago and continuing up to the present, a series of world records have been achieved for the release of energy from fusion reactions using fuels that will be used in commercial fusion power plants. The most recent record is the release of 10,700,000 watts of fusion power for a short time. This amount of energy, if produced continuously, could supply about 3,500 homes with electricity. The TFTR will continue to operate through most of 1995 before being shutdown in order for the fusion program to move ahead with other program priorities.

The inherent attributes of fusion energy and its unbroken string of successes have led the Department of Energy to consider fusion energy as an important potential source of electricity-generating capacity in the middle of the 21st century.

FUSION PROGRAM GOALS

The present program goal is to have an operating demonstration plant by about 2025, and an operating commercial power plant by about 2040. An intermediate objective of the program is to produce, by the year 2010, a technology demonstration which verifies the practicability of commercial electric power production, as stated in the Energy Policy Act of 1992 (EPACT). However, budgetary constraints over the past few years may mean that the schedule for meeting such objectives is delayed. Therefore, we are reevaluating the program goals, including those in EPACT, with the objective of making whatever changes are necessary to bring the goals in line with anticipated funding levels in the outyears.

Meeting the fusion program goals requires a broadly based fusion energy program with a long-term perspective, one that carefully defines the crucial scientific and technology issues and deploys the resources needed to resolve those issues in an era of stringent national budgets.

The Administration recognizes that significant budgetary commitments will be required to meet the programmatic objectives and milestones identified above. The Administration will conduct a review of the fusion energy program, under the auspices of the President's Commission of Advisors on Science and Technology (PCAST) and the Office of Science and Technology Policy.

This review, which will include an examination of U.S. participation in the ITER construction and the role of the planned TPX project, is intended to be completed by summer 1995. When the final results of this study are available, the President will review the PCAST recommendations

and make a determination on the appropriate future strategy for the U.S. fusion program. Start of construction of the TPX project will await that determination.

APPROACHES TO FUSION

The present fusion program includes development of two approaches to fusion, namely, magnetic confinement fusion and inertial confinement fusion.

The magnetic approach uses magnetic fields to contain the fusion fuel, allowing the fuel nuclei to remain close together long enough for fusion reactions to occur. In inertial confinement fusion small pellets of fusion fuel are imploded by high energy beams, allowing the fuel atoms to fuse together to release energy.

The Office of Fusion Energy is responsible for the entire program of research and development directed at magnetic fusion, while the majority of the effort in inertial fusion is funded by the Office of Defense Programs. Only the development of the energy-specific high energy beams and fuel pellet production for inertial fusion energy are currently pursued by the Office of Fusion Energy.

FUSION PROGRAM STRATEGY - MAGNETIC FUSION

The fusion development program is in a period of major transition. It is evolving from a program focussed on physics research to one including engineering development, from a laboratory and university base to include an industry base, and from a domestic program to an international program.

Budget realities have made it imperative that a specific type of fusion concept be selected and vigorously pursued. The magnetic fusion program is, therefore, focussed on the development of a donut-shaped device called a tokamak to generate the fusion energy. This focussing has occurred for several reasons. First and foremost is the objective evaluation of research done on many alternatives to the tokamak over the years. This evaluation has been done independently by all of the world's major fusion programs, and each program has concluded that the tokamak stands the best chance of being developed into a successful power producing system. The need to collaborate with international partners has also contributed to focussing the U.S. program on the tokamak.

The magnetic fusion program strategy is focused on developing the information that is necessary for the design, construction, and operation of a tokamak magnetic fusion power plant for the purpose of demonstrating that fusion can be an economically competitive source of electricity. Four major activities have been identified as necessary to accomplish this objective.

The first activity involves the need to understand the physics of igniting and maintaining a "burning" plasma in a fusion power plant. In addition, a data base for the design and operation of the components needed in a fusion power plant must be developed. Each of the world's major fusion programs have independently reached the conclusion that a facility to address these issues should be the next step in fusion development. To this end, the European Union, Japan, the Russian Federation, and the United States have signed an agreement to conduct engineering design and supporting research and development for the International Thermonuclear Experimental Reactor (ITER). Decisions on whether and where to construct ITER could be made as early as mid-1996, with a more likely date being 1997-1998.

The second activity involves the development of advanced structural materials that will not become highly radioactive in the fusion power plant environment. The international community has agreed that the development of advanced materials requires the building of a materials testing facility that will operate at conditions that are prototypic of those in a fusion power plant.

The third activity is the development and testing of the components needed to extract the energy after the fusion reactions occur so that it can be used to generate electricity. These components, generally referred to as the "blanket," also contain materials that, when exposed to the products of fusion reactions, become fusion fuel. The fuel is then cycled back into the power plant to keep it operating. The several different types of blankets will be tested in ITER after the completion of the work required for the first activity.

The fourth activity addresses the need to improve the power plant embodiment of fusion. The Tokamak Physics Experiment will offer a unique opportunity to improve the economics of a demonstration power plant by making it smaller, more efficient, and thus, less expensive to build and operate than would otherwise be possible. The TPX, which should be operating before the ITER, would also contribute information to the later design phase of ITER components and to how to operate ITER continuously during its second phase as an engineering test bed for blanket development. TPX would also help maintain a strong domestic program so that the United States is able to take advantage of its participation in ITER. In building the TPX, United States' industry will gain valuable experience that will allow them to successfully compete with industry abroad for the large contracts that will be available for the construction of ITER.

Within magnetic fusion, various alternatives have been evaluated on the basis of extensive objective data collected after many years of government-supported research. Development of the tandem mirror, the reversed field pinch, and the field-reversed compact toroid devices, has been stopped. Prior to that time, as many as thirty concepts were evaluated and their support was terminated for objective technical reasons. Support for exploration of several alternates is included in the current budget request. When the Inertial Fusion Energy program is included, the amount devoted to alternate concepts is approximately 4% of the fusion budget. While budget realities have forced the U.S. program to concentrate on tokamaks, both the European Union and Japan have continued research on non-tokamak fusion concepts. The U.S. program maintains contacts with those parts of the European Union and Japanese programs.

FUSION PROGRAM STRATEGY - INERTIAL FUSION

The strategic plan for the development of inertial fusion as an energy source requires specific underpinning technical information before development details can be implemented. First, the amount and nature of energy required to initiate thermonuclear burn of laboratory targets should be determined. An important part of this information is how much gain, or energy multiplication, can be obtained from laboratory inertial fusion. This ignition and gain information is expected to come from the target physics program and the National Ignition Facility carried out under Defense Programs within DOE. Second, a high intensity energy source (driver) that has high efficiency and can be reliably pulsed several times per second must be developed in order to use laboratory ignition in energy applications. A heavy ion accelerator has been consistently identified as the best candidate driver. The inertial fusion energy program will conduct the physics tests of the heavy ion beam concept. When thermonuclear burn of laboratory targets is established and an energy-specific driver has been developed, then a detailed development approach for inertial fusion energy can be implemented. The growth and evolution of this IFE activity into a full development program is also predicated on success in the inertial fusion confinement effort that is being pursued by the Department's Office of Defense Programs.

The Energy Policy Act of 1992 requires that the Department establish "... a broad based fusion energy program." To the extent possible within budgetary resources, several alternatives to tokamak-based fusion are being explored. This exploration includes not only alternatives in magnetic fusion, but also in inertial fusion. In 1990 the Fusion Policy Advisory Committee recommended to the Department that both the magnetic and inertial paths to fusion be carried on in parallel, at independent paces that are technically justifiable until sufficient information is available to make a choice between them. It is our current judgement that this information will not be available until the second decade of the next century.

PROGRAM PARTICIPANTS

The fusion energy program is conducted at many institutions located throughout the U.S. In addition, the program has ties to various institutions throughout the world by virtue of an extensive network of collaborative agreements. The major participants in the fusion program are:

National Laboratories, which can bring together multidisciplinary teams of scientists and engineers to solve specific technical problems and to design and construct the increasingly complex experimental devices which we require to make progress.

U.S. Industry, which will provide the design and manufacturing expertise required to build our new facilities and will eventually produce and

market fusion power plants. Also, General Atomics, an industrial firm, operates the D-III-D tokamak device, participates in the base science and technology programs, and is active in both the Tokamak Physics Experiment and the International Thermonuclear Experimental Reactor program.

Universities, which will train the next generation of our program's scientists and engineers while providing the basic theoretical and experimental underpinnings of the fusion program.

International Partners, with whom we jointly plan and execute our fusion research programs and with whom we are now conducting the engineering design of the ITER.

ELEMENTS OF THE PROGRAM

The Tokamak Fusion Test Reactor has been conducting deuterium-tritium experiments for the past year and has recently achieved a record 10.7 million watts of fusion power. The research on TFTR has made a significant step toward demonstrating the scientific feasibility of fusion power and has provided key elements of the physics basis for ITER.

The International Thermonuclear Experimental Reactor (ITER) is a prime example of cooperation with international partners. The President has called ITER "the centerpiece of the research effort in magnetic fusion energy....." The objective of ITER is to demonstrate the scientific and technological feasibility of using magnetic fusion energy for the production of electricity. ITER, in reaching its goal, will address the ignition and burn issue by becoming the first fusion device to reach ignition, the condition under which the fusion reaction is self-sustaining. ITER will also address the issue of component development for the extraction of the energy from the fusion reactions by providing a test environment in which scale models of these components of future fusion power plants can be tested under conditions similar to those that will be found in the power plants.

The Tokamak Physics Experiment (TPX) will be built on the site of the Tokamak Fusion Test Reactor at the Princeton Plasma Physics Laboratory in New Jersey. The TPX will be an advanced tokamak device that offers a unique opportunity to move fusion science and technology down the path toward an economically attractive demonstration fusion power plant by addressing the issue of fusion concept optimization. TPX will do this by exploring advanced modes of operating a tokamak, such as continuous operation, allowing future tokamaks to be smaller, more efficient, and thus, cheaper to build and operate. The mission of TPX is complementary to the mission of the ITER, and together these projects represent the future of the U.S. fusion program. Construction of the TPX will allow the U.S. to remain a strong partner in the ITER program both scientifically and in terms of our industrial base.

While ITER and TPX play a central role in the strategy for moving toward a fusion economics demonstration power plant, a continuing commitment is required to conduct a strong domestic program to support the ITER and TPX project, and to put the U.S. in a position to use the information gained for the demonstration plant, and ultimately for commercialization. Important elements in the U.S. domestic program include the D-III-D experiment at General Atomics, and the Alcator C-Mod experiment at the Massachusetts Institute of Technology. These and other groups conduct physics research to support ITER, to improve the tokamak concept, and to maintain competencies in experimental, theoretical, and computational plasma physics.

The base program must also contain the engineering and technology developments needed to support ITER and TPX and to lead the fusion program into the demonstration power plant phase. Large superconducting magnet design and construction, very high power and high frequency microwave heating devices, and means of fueling the fusion plasma are some of the necessary technologies that must be developed.

The Materials Test Facility (MTF), which is necessary for the development of advanced, low-activation materials, is also being pursued. At the present time the U.S. is collaborating on a conceptual design for this facility along with the EU, Japan, and the Russian Federation. There has been no commitment by any of the Parties to a Materials Test Facility beyond the current design activity.

THE ROLE OF INDUSTRY

Successful results from the activities directed at the four development issues will lead to the final phase of fusion development: commercialization. We have already begun early preparations for a transition of expertise to industry to support this, particularly in the TPX program. The private sector is expected to play the principal role in developing new commercial technologies. The government's role in fusion energy is necessary because fusion is such a long-term program and the technical and economic risks are too high to expect the private sector to fund the work for at least the next two decades. However, the ultimate technology transfer of fusion to the private sector will be most efficiently accomplished if there is timely introduction and continued involvement of industry in the U.S. fusion program. Thus, the need for sustained involvement of the industrial sector as an important step toward developing the fusion energy option and meeting the Department's goals in the area of technology transfer is recognized. To this end, we are developing partnerships between national laboratories and private industry in order to successfully accomplish both the TPX and the ITER activities.

It is anticipated that an increasing share of the funds expended on fusion energy research will be spent in industry, with a substantial majority of the total funds going to industry by the time the design of a demonstration power plant begins.

The following sections contain a brief description of the accomplishments of the program in FY 1994, the work ongoing in FY 1995, and the work proposed for FY 1996 in each of the three subprograms of the Fusion Energy Program.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative in whole dollars.)

LEAD TABLE

Fusion Energy

Activity	FY 1994 Adjusted		FY 1995 Appropriation		FY 1995 Adjustment	FY 1995 Adjusted		FY 1996 Request
Operating Expenses								
Confinement Systems	$163,156		$150,506		$37,351	$187,857		$131,492
Applied Plasma Physics	57,250		54,275		0	54,275		48,821
Development & Technology	77,950		89,026		0	89,026		100,400
Planning & Projects	38	a/	5,857		1,507	7,364		6,053
Inertial Fusion Energy	3,859		6,000		2,000	8,000		3,100
Program Direction	8,926		9,600		0	9,600		9,600
Subtotal Operating Expenses	311,179		315,264		40,858	356,122		299,466
Capital Equipment	15,519		10,299		0	10,299		12,479
Construction	1,940		47,000		-45,000	2,000		54,100
Subtotal Program	$328,638		$372,563		-$4,142	$368,421		$366,045
Adjustment	-6,361	b/	-2,065	b/	------	-2,065	b/	-------
Total Program	$322,277		$370,498		-$4,142	$366,356		$366,045

a/ Excludes $4,711,000 which was transferred to the SBIR ($4,559,000) and STTR ($152,000) programs.

b/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses	$311,179	$315,264	$40,858	$356,122	$299,466
Capital Equipment	15,519	10,299	0	10,299	12,479
Construction	1,940	47,000	-45,000	2,000	54,100
Subtotal Program	$328,638	$372,563	-$4,142	$368,421	$366,045
Adjustment	-6,361	-2,065	------	-2,065	-------
Total Program	$322,277	$370,498	-$4,142	$366,356	$366,045
Staffing (FTEs)					
Headquarters	61	61	0	61	61
Field Office	21	21	0	21	21
Total	82	82	0	82	82

Authorization: Section 209, P.L. 95-91, "Department of Energy Organization Act"

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

SUMMARY OF CHANGES

Fusion Energy

FY 1995 Appropriation	$ 372,563
- Adjustments	- 4,142
FY 1995 Adjusted	$ 368,421

Operating Expenses

Confinement Systems Supports continued operation of DIII-D and Alcator C-Mod. PBX will be shutdown indefinitely. TFTR decontamination and decommissioning will be initiated. Princeton scientific and technical staff will be involved in data analysis of D-T experiments as well as off-site collaborations. R&D in support of the Tokamak Physics Experiment (TPX) project continues at a reduced level as construction is initiated. The start of TPX construction will await completion of the PCAST review and a determination by the President as to the appropriate future strategy for the U.S. Fusion Program.	- 56,365
Applied Plasma Physics Diagnostic development and computer facility support are funded at slightly below the FY 1995 level with the primary focus on supporting ITER and TPX. Significant reduction in small tokamak support will occur.	- 5,454
Development and Technology This increase provides for the support of U.S. share of the ITER Engineering Design Activities including the engineering design and technology development tasks required to validate the ITER design and for development of low activation materials.	+ 11,374
Planning and Projects Provides primarily for SBIR obligations.	- 1,311

Inertial Fusion Energy..... - 4,900
Activities are reduced as a consequence of the decision to focus the effort on initiation of construction of ELISE.

Program Direction..... 0
Funds are provided to support the staffing resources associated with the Fusion Energy Program.

Capital Equipment..... + 2,180
An increase in capital equipment funds is primarily associated with a decision to proceed with a significantly descoped version of the equipment upgrades on the D-III-D facility.

Construction..... + 52,100
The increase is primarily associated with the initiation of the ELISE project and construction of TPX.

FY 1996 Congressional Budget Request..... $366,045

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Magnetic Fusion Energy - Confinement Systems

The mission of the Confinement Systems subprogram is to investigate the magnetic confinement of hot plasmas in experimental devices of a size and scale relevant to the International Thermonuclear Experimental Reactor (ITER) or a fusion power plant. This requires exploratory research on both the ignition and burn physics and concept improvement issues. The Confinement Systems subprogram will investigate these subjects in FY 1996: completing the analysis of the deuterium-tritium (D-T) experiments in the Tokamak Fusion Test Reactor (TFTR) at the Princeton plasma Physics Laboratory (PPPL); conducting research to resolve the major scientific issues of magnetic fusion on both U.S. and foreign devices; designing the Tokamak Physics Experiment (TPX) to study improvements of the tokamak concept; and carrying out physics R&D for the TPX and the ITER designs.

The major scientific topics within the ignition and burn and the concept improvement issues are: energy confinement; plasma heating; equilibrium and stability; power exhaust and particle control; current drive; and physics of the energetic helium ions or alpha particles, that are the products of D&T fusion reactions.

Energy confinement is an important physics issue for future fusion devices, such as ITER, because it determines whether they can achieve a self-sustaining fusion reaction (ignition). In a fusion power plant, the deuterium-tritium fuel must be heated to a temperature of about 100,000,000 degrees Celsius to initiate the fusion reactions. Then, the thermal energy of the hot fuel mixture (plasma) must be sufficiently well confined that the heat generated by the fusion reaction sustains the required temperature. Research on energy confinement and plasma heating involves developing and using powerful heating systems, such as neutral beams and/or radio-frequency (RF) waves to heat the plasma, studying the plasma to understand its behavior, and determining how to improve energy confinement. Experimental energy confinement research is carried out in close cooperation with the diagnostics and theory activities supported by the Advanced Physics and Technology subprogram.

The issue of equilibrium and stability affects the reliability and economic attractiveness of fusion power. In a fusion power plant, the temperature and density of the plasma (i.e. the pressure of the plasma) must be high enough to produce sufficient fusion power to be practical. In a tokamak, the external magnetic field must apply a pressure about 10 times larger than the pressure of the plasma to provide stable containment of the plasma. Research on equilibrium and stability is concentrated on developing designs and operating conditions that theory predicts will maximize the plasma pressure confined by practical magnets. Research to date has shown that D-shaped plasmas can achieve a sufficiently high pressure to meet the design objectives of ITER. Future work will focus on the study of advanced operating regimes, which could permit even higher pressures. If successful, this work could lead to more compact and cheaper fusion power plants.

The most critical design issue for next generation devices such as ITER and TPX is power exhaust/particle control, which is closely coupled to both physics and technology issues. Both alpha particles (helium nuclei) and large amounts of heat (thermal power), generated by the fusion reactions, must be exhausted from the vacuum vessel of a fusion power plant, and the deuterium-tritium fuel has to be replenished. High power on material surfaces surrounding a plasma can dislodge impurities, which migrate to the center of the plasma and both dilute the fuel and cool the plasma by radiation. Therefore, physics and technology research is needed to develop methods to carry away both the plasma power and the leftover alpha particles with minimal impurity generation. Studies are being conducted to develop better power exhaust and particle control systems (such as magnetic divertors), to understand impurity migration to the plasma core, and to develop plasma fueling systems (such as high-velocity hydrogen or deuterium pellet injectors).

In a tokamak device, a magnetic field provided by external coils and a magnetic field provided by driving a current in the plasma are required. The current drive issue addresses the need to create this current in a continuous or steady-state mode, as opposed to the present short-pulses. Continuous operation will reduce the problems of thermal and mechanical fatigue of the components of a power plant. In a tokamak it is possible

to drive the required currents continuously by several techniques including radio-frequency waves and optimization of a current generated by the plasma itself. Planned current drive experiments will concentrate on improving the efficiencies of radio-frequency wave current drive and optimizing the self-generated current. These experiments are important to ITER, which will require improved current drive in its technology phase, and to TPX, which will use current drive to achieve advanced tokamak configurations.

The behavior of the alpha particles generated by the fusion reactions in the plasma is the least explored and potentially most important physics issue. First, the impact of alpha particles on energy confinement and plasma stability could affect the basic feasibility of a fusion power plant. Further, understanding alpha particle heating is necessary to control a burning plasma. Work on this issue is presently being addressed in TFTR, which recently achieved a world record 10.7 million watts of fusion power.

The goal of the U.S. Magnetic Fusion Energy program is to develop fusion power plants as a technically and economically credible energy source for the 21st century. Improvements in tokamak performance could lead to more economical tokamak power plants. The Tokamak Physics Experiment, is currently being designed by a national team of experts to study such improvements and demonstrate the techniques required for continuous operation. Construction of TPX will enable U.S. industry to participate fully in the construction of ITER, while operation of the TPX for long pulse lengths will also provide valuable information for the nuclear technology testing phase of ITER.

Because of their unique capabilities, several existing devices are being used to investigate the scientific issues discussed above and to prepare for the burning plasma physics experiment on ITER. Analysis of the data from the D-T experiments on TFTR is providing information on the behavior of D-T plasmas and alpha particle physics. Experiments on confinement, pressure limits, power and particle control, and current drive will be carried out on the DIII-D tokamak at General Atomics (GA). Research at the Alcator C-Mod tokamak at the Massachusetts Institute of Technology will be focused on the power and particle control with an ITER-like configuration, radio-frequency wave heating, and confinement in a high-field, high-density plasma.

Budget priorities necessitate eliminating research on some of the existing major toroidal devices in Confinement Systems. The Princeton Beta Experiment at PPPL will not operate in FY 1995 or FY 1996. Also, the TFTR will be shutdown at the end of FY 1995 in order to begin preparation for the Tokamak Physics Experiment. The Advanced Toroidal Facility at the Oak Ridge National Laboratory (ORNL), an alternate configuration to a tokamak, was shut down at the end of FY 1994. The U.S., however, will collaborate with large alternate concept programs (stellerators) in Japan and Germany in order to obtain first hand knowledge on progress in this area. Stellerators provide an alternate path to tokamaks in developing a continuously operating fusion power plant.

As the number of fusion facilities diminishes and the U.S. fusion program consolidates its focus on ITER, TPX, and other high priority issues, a consolidated group of the scientific personnel at universities and laboratories with no operating research devices will collaborate on the remaining tokamak devices and stellarators. Lawrence Livermore National Laboratory and Oak Ridge National Laboratory scientists and engineers will continue major collaborations on DIII-D at General Atomic and support of the national effort on TPX. Scientists from the TFTR program at PPPL will begin collaborative activities on other tokamaks in the U.S. and abroad. Joint tokamak experiments will continue on TEXTOR and ASDEX-Upgrade in Germany, TORE SUPRA in France, the Joint European Torus (JET) in England, JFT-2M and JT-60-Upgrade in Japan.

The following table summarizes the operating expense funding for the Confinement Systems subprogram:

II. A. Summary Table: Magnetic Fusion Energy - Confinement Systems

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Tokamak Fusion Test Reactor (TFTR)	$ 74,832	$ 66,230	$ 38,000	$ -28,230
Base Toroidal	61,341	71,808	81,300	9,492
Advanced Toroidal	7,804	7,819	0	-7,819
Tokamak Physics Experiment (TPX)	19,179	42,000	12,192	-29,808
Total, Magnetic Fusion Energy - Confinement Systems	$ 163,156	$ 187,857	$ 131,492	$ -56,365

II. B. Laboratory and Facility Funding Table: Magnetic Fusion Energy - Confinement Systems

Lawrence Livermore National Lab	4,469	4,950	4,500	-450
Oak Ridge National Lab	10,363	8,541	7,345	-1,196
Princeton Plasma Physics Lab	95,573	106,945	65,092	-41,853
All Other	52,751	67,421	54,555	-12,866
Total, Magnetic Fusion Energy - Confinement Systems	$ 163,156	$ 187,857	$ 131,492	$ -56,365

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Magnetic Fusion Energy - Confinement Systems			
Tokamak Fusion Test Reactor (TFTR)	During FY 1994, TFTR achieved a record 9 million watts of fusion power and made a significant step toward demonstrating the scientific feasibility of fusion power. TFTR provided specific information on confinement in deuterium-tritium (D-T) plasmas, radio frequency heating of D-T plasmas, and the behavior of the fusion-produced alpha particles to the ITER design team.	TFTR scientists recently achieved their goal of 10 million watts of fusion power. They will continue D-T experiments in FY 1995 to gain additional information on the effects of alpha particles on the plasma and to test alpha particle diagnostics for ITER. They will complete the D-T experiments by the end of the year and begin final analysis of the data.	TFTR scientists will complete the analysis of the TFTR data. Then they will begin collaborative experiments on DIII-D and Alcator C-MOD in the U.S., JET, ASDEX-Upgrade, and Tore Supra in Europe, and JT-60U in Japan. These experiments will be focused on confinement, plasma heating, current drive, power handling and studies of the edge plasma, and D-T experiments on JET. These collaborations will use the TFTR group's expertise to carry out physics R&D for ITER and TPX and will also maintain the experienced team needed to operate the TPX. TFTR engineers and technicians will complete the safe shutdown of all TFTR systems and begin preparations for the removal of the tokamak. They will also prepare many of the TFTR facilities for transfer to TPX.
	$ 74,832	$ 66,230	$ 38,000
Base Toroidal	DIII-D was operated at the beginning of the fiscal year and increased its world record high beta (efficiency of magnetic field utilization) to 12%. It was shut down for about 7 months for improvements to heating and power exhaust systems, and for the installation of a new pellet fueling system. Experimental operations resumed in May 1994 with a focus on heating and current drive experiments with the new power system, power and particle exhaust studies, and confinement experiments, all in support of the design of ITER and TPX.	The DIII-D program will increase operations and continue with current drive experiments using the upgraded radio frequency power system and pellet fueling experiments. The engineering design of a radiative divertor for heat and particle exhaust will be initiated, and the 2 MW microwave heating system will be completed. DIII-D will also investigate long-pulse operating techniques that could be extrapolated to the operation of ITER and TPX, which will both have significantly longer operating pulses (approximately 1000 seconds).	The DIII-D program will continue with heating and current drive experiments using combined microwave and lower frequency radio waves. Fabrication of major components of the radiative divertor will be completed. DIII-D will also explore new methods of tokamak operation to improve the attractiveness of fusion power plants.

III. Magnetic Fusion Energy - Confinement Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Base Toroidal (Cont'd)	Alcator C-MOD successfully completed its first phase of physics operation. Divertor and edge physics studies along with detailed measurements of the scrape-off layer were performed. Additional heating and diagnostic systems were added during a five-month shutdown, and the second phase of operations begun in May.	C-MOD scientists will undertake an evaluation of power handling, heating efficiency and impurity generation using a flexible particle removal scheme that is relevant to ITER and will compare results with other existing schemes.	The Alcator C-Mod program will extend its heating and power handling program to new regimes with the addition of an additional 2 MW of heating power. In addition, C-Mod will begin experiments on radio wave current drive at high plasma densities.
	Scientists from ORNL, GA, and a few universities continued collaborations with the tokamaks in Germany (TEXTOR and ASDEX), France (Tore Supra), England (JET), Japan (JFT-2M and JT-60U), and Russia (T-10) in the areas of power and particle exhaust, long pulse operation, and radio frequency heating. These collaborative programs provide important physics R&D for ITER and TPX.	International collaborative programs will continue with an emphasis on the needs of the ITER and TPX physics design activities.	International collaborative programs will continue with an emphasis on the needs of the ITER and TPX physics design activities.
			Funding in the amount of $269,000 has been budgeted for the STTR program.
	$ 61,341	$ 71,808	$ 81,300
Advanced Toroidal	PBX-M was operated briefly in the early part of the fiscal year to complete experiments in progress and then it was mothballed for the remainder of the year. These experiments produced useful results on plasma profile control with radio frequency heating in support of the TPX design. Several subsystems were refurbished and modified in preparation for future operations.	PBX-M will remain mothballed in FY 1995 and the PBX-M group will participate in the experiments on TFTR.	PBX-M will be shut down in FY 1996, and the remainder of the PBX-M group will participate in collaborative experiments.

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III. Magnetic Fusion Energy - Confinement Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Toroidal (Cont'd)	The re-assembly of the ATF facility was completed in the middle of fiscal year. About one month of long-pulse experiments in support of power and particle exhaust requirements for TPX and ITER were carried out before ATF was permanently shut down in the summer of 1994.	The remaining ATF scientific staff will collaborate on the U.S. and foreign tokamaks to support the ITER and TPX design and on international stellarators to keep abreast with the developments in this alternate concept.	ORNL scientific staff will continue to keep abreast of the developments in alternate concepts and will collaborate on international stellarators.
	$ 7,804	$ 7,819	$ 0
Tokamak Physics Experiment (TPX)	The national TPX project team began preliminary design of major tokamak systems and carried out supporting R&D. This R&D is being coordinated with that for ITER in order to maximize cost efficiency. A DOE Management Systems Review of TPX was successfully conducted which judged the project's management systems and business practices to be fundamentally sound. Industrial subcontracts under PPPL and LLNL were established for hardware design of the vacuum vessel, plasma facing components, and magnets. RFP's for systems integration support and construction management were also released. The Preliminary Safety Analysis Report was initiated.	The TPX lab-industry team will continue preliminary design of major tokamak systems in preparation for starting final design work on most systems in FY 1996. The design effort will be expanded to encompass some auxiliary systems. Prototype superconductor material for the magnets will be produced by industry to demonstrate manufacturing techniques and qualify vendors for future procurements. In addition, mock-ups of the internal tokamak components will be built to develop and demonstrate design concepts for remote (robotic) maintenance equipment. Industrial contracts for systems integration and tokamak construction management will be placed. The Preliminary Safety Analysis Report will be completed and submitted to DOE.	The project's highest priority R&D will be carried out on schedule to support design work on the magnets, plasma facing components, remote maintenance equipment, and vacuum vessel. Physics R&D will also continue in support of the design effort. Final design activities will be limited to critical tokamak subsystems. The industrial management support staff located at Princeton will be fully established.
	$ 19,179	$ 42,000	$ 12,192
Magnetic Fusion Energy - Confinement Systems	$ 163,156	$ 187,857	$ 131,492

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

FUSION ENERGY

1. Preface: Magnetic Fusion Energy - Applied Plasma Physics

The Applied Plasma Physics subprogram plays a crucial role in the development of the fundamental understanding of plasma behavior in magnetic confinement devices, and therefore, funds work that addresses the ignition and burn and the concept optimization issues. To achieve its mission, the subprogram funds:

1. efforts in the development of theories and models of plasma behavior in various confinement geometries with emphasis on the tokamak,

2. experimental confinement physics including diagnostics development,

3. computing resources for the entire fusion program,

4. the development of new approaches in the design and operation of toroidal devices, as well as with the development of novel concepts and geometries for possible future power plants,

5. the use of development tools in the analysis and interpretation of data from experiments funded by the Confinement Systems subprogram, and

6. people to participate in the design of experiments on existing devices and in the design of future devices. Particular emphasis is presently placed on support of the design of ITER and TPX.

This subprogram includes three separate subactivities: Plasma Theory, Experimental Plasma Research, and Magnetic Fusion Energy Computing.

Recently, in Plasma Theory activity, there has been significant improvement in the understanding of the physics of tokamaks. These advances, coupled with a steady increase in computational capabilities, have led to an effort to develop models to simulate what is happening inside a tokamak. Improvement and evaluation of these models will continue in FY 1996. The capabilities of these models to predict how plasmas will behave will be tested by comparing results from the models to actual plasma performance observed in various tokamaks including DIII-D, C-MOD and TEXT. When the models are verified they will be used as tools to aid in the design of fusion experiments such as TPX and ITER, and eventually, in the design of a demonstration power plant.

The Experimental Plasma Physics effort develops and extends the scientific basis for fundamental fusion concepts. Most tasks are carried out at universities, with lesser involvement by national laboratories and industry. This approach exploits the ability of university programs to economically obtain the information necessary to justify investment in large experimental machines. The emphasis of this part of the subprogram is shifting from the "conventional" tokamaks to innovations in tokamaks and to non-tokamak concepts. This shift will be accelerated by planned restructuring in FY 1996.

The diagnostic development activity will continue to develop advanced diagnostics for present and future devices, most specifically ITER. This activity will become more costly, as developmental diagnostic devices are deployed on larger fusion facilities like TPX. International collaborations will be increased where appropriate.

The Office of Energy Research's Office of Scientific Computing provides access to state of the art computing hardware for the fusion energy program. The Energy Sciences Network, supported by the Office of Scientific Computing, and related computing facilities, supported by the Office of Fusion Energy, provide the infrastructure for the development of codes, storage and analysis of experimental data and the means of maintaining

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I. Magnetic Fusion Energy - Applied Plasma Physics (Cont'd)

cooperative projects with the world fusion community.

II. A. Summary Table: Magnetic Fusion Energy - Applied Plasma Physics

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Fusion Plasma Theory	$ 18,231	$ 17,100	$ 18,000	$ 900
Experimental Plasma Research	24,882	24,025	20,821	-3,204
MFE Computing	14,137	13,150	10,000	-3,150
Total, Magnetic Fusion Energy - Applied Plasma Physics	$ 57,250	$ 54,275	$ 48,821	$ -5,454

II. B. Laboratory and Facility Funding Table: Magnetic Fusion Energy - Applied Plasma Physics

Lawrence Livermore National Lab	12,740	11,784	10,211	-1,573
Los Alamos National Laboratory	2,380	1,585	2,013	428
Oak Ridge National Lab	4,058	4,043	3,578	-465
Princeton Plasma Physics Lab	3,361	3,399	3,054	-345
All Other	34,711	33,464	29,965	-3,499
Total, Magnetic Fusion Energy - Applied Plasma Physics	$ 57,250	$ 54,275	$ 48,821	$ -5,454

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Magnetic Fusion Energy - Applied Plasma Physics			
Fusion Plasma Theory	Maintain emphasis on improved understanding of how energy and particles are lost from the plasma in toroidal devices. Provide codes to interpret the Deuterium-Tritium experiments on TFTR. Make use of massively parallel computers to increase the detail and realism of codes for the prediction of plasma stability and losses from the plasma under self-sustaining fusion conditions.	Maintain emphasis on improved understanding of plasma losses in toroidal devices. Make use of this improved understanding to advance the capabilities of predicting ITER performance. Make these capabilities available to increase the range of possible design alternatives for fusion power plant concepts.	Begin using tools developed under the Numerical Tokamak Initiative to model transport, i.e., loss of particles and energy, in fusion grade plasmas. Incorporate the effect of fluctuations in the plasma on the loss of particles and energy from tokamaks in the presence of significant alpha particle populations. Deploy codes that contain the effects of stabilization of plasma magnetic activity by shear and plasma rotation. Develop models to characterize plasma transients and ways of controlling plasma magnetic activity.
	Continue development and application of fusion physics models for ITER, with particular emphasis on plasma stability, disruptions and heat and particle control in the divertor in ITER.	In continuing support of ITER design, develop and validate more realistic models of plasma edge and divertor; develop models of how to stabilize plasmas by causing the plasma to rotate; develop models to predict and control plasma disruptions in TPX and ITER; and develop new ways of designing plasma control systems.	Deploy realistic plasma edge codes to predict ITER performance in controlling particle and energy fluxes and initiate efforts to develop optimum designs for an ITER divertor. Develop codes to characterize and provide optimization of control system parameters. Develop codes to study the use of synergistic effects of external current drive, internally generated currents and power deposition within the plasma to achieve plasma stability for enhanced plasma operating conditions.
	Maintain meaningful contacts with domestic and foreign alternate concept experiments and apply the ideas and results coming from these experiments to the improvement of tokamak operations.	Continue cooperating with foreign alternate concepts programs and apply the special insights gained in these geometries to point to improved tokamak operations.	Initiate steps to participate in modeling efforts for the Large Helical Device (LHD) being constructed in Japan which is scheduled to have first plasma in 1998. Continue the transfer of models and tools developed in the study of alternate concepts to the development of advanced tokamak scenarios with particular emphasis on plasma stability and fueling.

III. Magnetic Fusion Energy - Applied Plasma Physics (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Fusion Plasma Theory (Cont'd)	$ 18,231	$ 17,100	$ 18,000
Experimental Plasma Research	Physics studies of tokamaks at aspect ratios significantly different from the mainline tokamaks are continuing at Columbia and PPPL. Investigating the physics of injecting small plasma bodies (called compact toroids) into magnetic fields will be completed at UC Davis and collaborations with Tokamak de Varennes in Canada on using compact toroids to fuel tokamaks will continue. Current drive using radio frequencies below the ion cyclotron frequency is being evaluated at the University of Wisconsin.	Continue physics studies of tokamaks at high and low aspect ratios at Columbia and PPPL to improve physics understanding of the tokamak. Participate in international collaboration on low aspect ratio tokamak research. Complete small scale evaluation of radio frequency current sustainment at the University of Wisconsin.	There will be some restructuring of a reduced toroidal plasma program beginning in FY 1996 with the intent of providing innovation in toroidal experiments and increasing the breadth of the small scale experimental program. Existing tokamak programs will complete conceptual physics studies of high and low aspect ratio configurations to improve physics understanding of the tokamak. There will be continued participation in international collaboration on low aspect ratio tokamak research. Several university experiments will be phased out to accommodate the reduced budget level.
	Continue developing physics basis of non-tokamak devices at several laboratories. At the University of Wisconsin, evaluation of the physics for transition of the plasma magnetic structure from tokamak to reversed field pinch configuration is being initiated with emphasis on understanding changes in particle and energy losses. Also at the University of Wisconsin, fabrication will continue on the helically symmetric plasma system which, when completed, will provide a small scale physics study of an alternate to both the tokamak and presently used stellarators. The field reversed configuration device to be used in compact toroid acceleration experiments at the University of Washington will be on line. Small scale experiments will be carried out on new concepts for more attractive fusion cores.	Investigate means for improving containment of energy and particles in reverse field pinches at the University of Wisconsin. Evaluate accelerated compact toroid plasma configurations as fusion core fueling concept at the University of Washington. Continue fabrication of the helically symmetric plasma system at the University of Wisconsin for physics test of a non-tokamak reactor concept. Evaluate accelerated compact toroid configurations as reactor fueling concept at the University of Texas on the TEXT tokamak. Provide critical evaluation of small scale exploration of new concepts to provide basis for determining continued funding.	There will be continuing emphasis on non-conventional plasma devices. Critical evaluations of the future role of the reverse field pinch as a confinement device will be carried out at the University of Wisconsin. The helically symmetric plasma system will be in the final stages of fabrication. If progress is satisfactory, funding for continuation of one or more of the new concepts completed in FY 1995 will be considered.

III. Magnetic Fusion Energy - Applied Plasma Physics (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Experimental Plasma Research (Cont'd)	Proof-of-principle experiments for different alpha diagnostics are being carried out during the deuterium-tritium operation of TFTR. Advanced diagnostic development of techniques applicable to ITER and other future devices will continue. Participate in planning for advanced diagnostics for ITER at a pace consistent with ITER management. Continue implementation of fluctuation diagnostics including participation in physics experiments on confinement devices.	Continue international collaboration for proof-of-principle tests for alpha diagnostic. Evaluate results obtained from alpha diagnostics deployed on TFTR. Actively participate in research and development consistent with ITER diagnostics requirements.	Diagnostics efforts will increase the emphasis on new approaches particularly with application to divertor measurements. The development of alpha diagnostics for future devices will involve collaboration with the JET tokamak. Based on projected ITER needs, selected ITER relevant diagnostic research will be initiated. The total diagnostics effort, however, will be reduced due to the lower budget level.
	Text upgrade is operating with microwave heated plasmas to observe transitions between low and high plasma confinement modes and to characterize these transitions using a heavy ion beam probe for measurements of internal plasma parameters as well as other diagnostics. Lack of a higher frequency power source at this time will limit the scale of experiments.	Operate TEXT upgrade experiment with restrictions in heating power and operation time due to budget constraints. Use full capability of heavy ion beam probe to characterize the internal parameters of the plasma which affect particle and energy movement within and out of the plasma for different plasma modes.	Continue operation at a reduced level of TEXT-Upgrade with microwave heating and with fully operational enhanced diagnostics. Emphasis will be on understanding internal plasma parameters and on the transport of energy and particles within and out of the plasma.
	An atomic data compilation and distribution, with increased emphasis on data for divertor and edge physics, is continuing.	Continue support of main stream fusion experiments including ITER by producing, compiling and distributing atomic data.	A reduced atomic physics program will place more emphasis on providing detailed information for divertor and edge modeling. International cooperation and collaboration will become more important and on line services will be further refined.
	$ 24,882	$ 24,025	$ 20,821

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III. Magnetic Fusion Energy - Applied Plasma Physics (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
MFE Computing	Support access to Energy Sciences Network and primary Energy Research computers. Provide local computers at fusion sites. Support specific computer code developments using new high performance computers for tokamak simulation.	Continue supporting access to Energy Research computing facilities. Prototype the implementation of distributed computing to gain experience in running experiments and theory support at remote sites. Support the development of codes optimized for massively parallel computers to advance the realism of codes that simulate tokamak operations.	Access to Energy Research computers and services will be supported by the programs. Computer services and purchase of computers will be funded out of individual programs as required.
	$ 14,137	$ 13,150	$ 10,000
Magnetic Fusion Energy - Applied Plasma Physics	$ 57,250	$ 54,275	$ 48,821

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Magnetic Fusion Energy - Development and Technology

The Development and Technology subprogram addresses the technology aspects of all of the fusion program issues: ignition and burn, concept optimization, fusion nuclear technology, and materials development. The work supported by this subprogram includes: the design and technology development for the International Thermonuclear Experimental Reactor; the development of the technologies needed for the Tokamak Physics Experiment, D-III-D and other fusion experiments; and studies of future fusion power plant designs. The work is divided into five main technical areas: ITER, Plasma Technologies, Fusion Technologies, Advanced Materials and Fusion Systems Studies.

The U.S. has committed to be an equal partner with the European Union, Japan and the Russian Federation in a 6-year program to prepare an engineering design and conduct related R&D for the ITER project. These tasks are referred to as the Engineering Design Activities or the EDA. The current agreement among the four ITER Parties is limited to the EDA phase of the program. While no decision has been made to construct the facility, the Parties will be initiating discussions on possible construction and the issue of facility siting. The overall objectives of ITER are to demonstrate the scientific and technological feasibility of fusion power, to demonstrate controlled ignition and extended burn, and to validate design concepts and qualify engineering components for a fusion power plant. The EDA began on July 21, 1992 with the signing of a formal agreement by the four Parties.

The Development and Technology subprogram funds the U.S. share of ITER design and technology R&D work. Theory and diagnostics support for ITER are funded by the Applied Plasma Physics subprogram, and experimental tokamak physics support is provided by the Confinement Systems subprogram.

One of the goals of the EDA effort is to involve U.S. industrial firms, enabling them to compete for contracts to fabricate components and systems for ITER. U.S. industrial firms have been integrated into the U.S. effort in order to provide expertise in large project management, systems design and integration, scale-model components and specific technology development tasks. The technology development tasks selected for emphasis in FY 1996 will be a continuation of those assigned by and negotiated with the ITER Director and approved by the ITER Council, the project's governing body, in FY 1995.

The second technical area, Plasma Technologies, supports the technologies needed to form, confine, heat, and sustain a fusion plasma. These technologies include magnetic systems, plasma heating systems, fueling systems and the materials that will be used in the plasma environment. While the principal focus of these activities is ITER, development in support of existing and near term devices, such as D-III-D and TPX, is also supported.

The magnetic systems program is developing reliable pulsed and steady state superconducting magnets that provide the magnetic fields required to confine the plasma. The heating program focuses on developing the technologies required to heat the plasma and to sustain it. The plasma fueling program develops high-speed deuterium and tritium pellet injectors not only to supply fuel to the plasma chamber, but also to control the plasma density for optimum performance. The development of heating and fueling systems directly supports the operating magnetic confinement experiments such as D-III-D and TFTR in the U.S. and the Joint European Torus in England, and has enabled the production of record plasma conditions in the D-III-D at General Atomics in San Diego. Research continues for materials that will withstand high heat and erosion in power plant components located near the plasma.

Future experiments in TPX and ITER of extended duration in higher density and higher temperature plasmas will necessitate continued development in each of these areas. The U.S. is participating in bilateral and multi-lateral international collaborations on these topics.

The third area, Fusion Technologies, focuses on long-term waste issues, safety and environmental considerations, component reliability, fuel

I. Magnetic Fusion Energy - Development and Technology (Cont'd)

breeding and processing, and removing the energy released during the fusion reactions from the plasma. These elements are important for future fusion power plants, as well as ITER and TPX.

The fusion systems studies team shifts effort to prepare for the commercial application of fusion power. Utility and industrial participation i strengthened, and the conceptual design of a DEMO, the major program step after ITER, is undertaken.

The advanced materials program includes three elements: low activation structural materials; insulating ceramics; and planning for a Materials Test Facility. All three are directed at development of the materials that will result in an economically competitive, environmentally attractive fusion power system. In all areas the work is closely connected to the international fusion program, through IEA and bilateral collaboration programs.

Some of the facilities used in the Development and Technology subprogram include: the FENIX Test Facility at the Lawrence Livermore National Laboratory for testing of superconducting magnets; the Plasma Materials Test Facility at Sandia National Laboratories; the RF Test Facility at Oak Ridge National Laboratory; and a test facility at VARIAN Corporation which tests high power microwave tubes. The Tritium Systems Test Assembly at Los Alamos National Laboratory (LANL) and the fusion materials work in the High Flux Isotopes Reactor (HFIR) at Oak Ridge National Laboratory (ORNL) are also supported under collaborative agreements with Japan.

II. A. Summary Table: Magnetic Fusion Energy - Development and Technology

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ITER	$ 60,776	$ 67,864	$ 80,100	$ 12,236
Plasma Technologies	5,516	6,040	3,300	-2,740
Fusion Technologies	3,461	3,337	4,600	1,263
Fusion Systems Studies	2,734	2,450	3,000	550
Advanced Materials	5,463	9,335	9,400	65
Total, Magnetic Fusion Energy - Development and Technology	$ 77,950	$ 89,026	$ 100,400	$ 11,374

II. B. Laboratory and Facility Funding Table: Magnetic Fusion Energy - Development and Technology

Argonne National Lab (East)	$ 5,943	$ 6,305	$ 8,100	$ 1,795
Lawrence Livermore National Lab	7,720	8,698	7,200	-1,498
Los Alamos National Laboratory	3,698	3,676	4,728	1,052
Oak Ridge National Lab	12,332	13,697	15,250	1,553
Pacific Northwest Lab	3,219	2,990	3,520	530
Sandia National Laboratories	5,475	7,297	6,780	-517
All Other	39,563	46,363	54,822	8,459
Total, Magnetic Fusion Energy - Development and Technology	$ 77,950	$ 89,026	$ 100,400	$ 11,374

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Magnetic Fusion Energy - Development and Technology			
ITER	In the magnet area, design and development of ITER model coils and preparations for test of these coils will continue. Superconducting strand with ITER specifications for Stage 1 is being completed and delivered. Component testing in FENIX will be continued.	In the magnet area, design and development of ITER model coils and preparations for testing of coil components and fabrication techniques will continue. U.S. testing of superconducting strand will continue. U.S., Japanese, and Russian Federation superconducting cable for ITER will begin. Structural materials tests will continue.	In the magnet area, design and development of ITER model coils and components and fabrication techniques will continue. U.S. testing of superconducting strand will continue and cabling the strands in collaboration with the EU will begin. Testing of full size, short samples of U.S., Japanese and Russian Federation superconducting cable for ITER will continue. Structural material tests will continue.
	In the heating area, development of gyrotron tubes and radio frequency Launchers will continue.	In the heating area, development of advanced radio frequency Launchers and gyrotron tubes and components for ITER will continue.	In the heating area, development of 1 MW, advanced gyrotron tube and components for ITER will continue. Development of radio frequency system components will be initiated.
	In the fueling area, general development of a high speed pellet injector to meet ITER needs will occur.	In the fueling area, design of a high speed pellet injector to meet ITER needs will occur.	In the fueling area, fabrication of a high speed pellet injector to meet ITER needs will occur.
	In the area of plasma materials interaction, the reference ITER divertor concepts are being studied and evaluated; and tests will continue on beryllium, carbon and high Z materials. Erosion and redeposition and disruption simulation tests will continue.	In the area of plasma materials interaction, ITER divertor concepts will be refined and examined. Tests will continue on beryllium, erosion and high Z materials. Erosion, redeposition and disruption simulation tests will continue. ITER divertor-specific modelling will be continued. Disruption modelling will continue.	In the area of plasma materials interaction, ITER divertor concepts will be refined and examined. Tests will continue on beryllium, erosion and high Z materials. Erosion, redeposition and disruption simulation tests will continue. ITER divertor-specific modelling will be continued. Disruption modelling will continue.

III. Magnetic Fusion Energy - Development and Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ITER (Cont'd)	Continued as a full participant in the ITER design for the EDA by providing the U.S. staffing for the Joint Central Team (JCT) and providing design support of the U.S. Home Team for the JCT. An industrial contract was established with a conglomerate of industrial companies to provide this support. The U.S. provides ITER design support on magnets, blankets, divertors, remote maintenance, vacuum vessels as well as costing and work breakdown analysis.	Continue the U.S. support for the Four-Party design of the ITER by continuing the tasks begun in FY 1994 and adding other support requested by the JCT to the limit of the U.S. share as defined by the ITER Council and negotiated with the JCT.	Continue the U.S. support for the Four-Party design of the ITER by continuing the tasks begun in FY 1994 and adding other support requested by the JCT to the limit of the U.S. share as defined by the ITER Council and negotiated with the JCT.
	Provide for management of the U.S. ITER Home Team. Support Operation of the San Diego ITER Co-Center.	Provide for management of the U.S. ITER Home Team. Support operation of the San Diego Co-Center.	Provide for management of the U.S. ITER Home Team. Support operation of the San Diego Co-Center.
	Conduct U.S. task assignments in TSTA to provide data base for and validation of ITER fuel cycle design, performance validation and safety analysis.	Conduct U.S. task assignments in TSTA to provide data base for and validation of ITER fuel cycle design, performance validation and safety analysis.	Complete tritium testing of palladium membrane reactor (PMR) concept for fuel cleanup as a stand-alone system. Begin integration of PMR concept into the full TSTA processing loop. Conduct U.S. task assignment in TSTA to provide data base for validation of ITER fuel cycle design.
	The magnetic fusion program will continue to evaluate and support improving the safety of ITER with regard to activation products, confinement, and tritium safety. An integrated failure data base and design standards will also be developed.	The magnetic fusion program will continue to evaluate and support improving the safety of ITER with regard to activation products, confinement, and tritium safety. An integrated failure data base and design standards will also need to be developed.	Determine and evaluate activation products and tritium source terms based on ITER design for safety analysis purposes. Conduct experiments as necessary on potential release mechanisms and confinement barriers.

III. Magnetic Fusion Energy - Development and Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ITER (Cont'd)	U.S. task assignments for ITER first wall/blanket/shield (FW/B/S) R&D will be conducted on key issues for reference concept (water cooling and steel structure) and for the advanced concept (lithium cooling and vanadium structure). For the advanced concept, the U.S. will lead in development of an insulator coating to minimize magnetic effects of flowing lithium.	Under an industry contract, small-scale mockups of the water cooled FW/B/S concept will be fabricated and tested with heating loads that simulate ITER operating conditions. A small vanadium test section cooled with high-temperature lithium will be operated to demonstrate the performance of the insulator coating for the advanced FW/B/S. Mockups exposed to a small 14 MeV neutron source in Japan will be initiated.	Medium-scale mockups testing of both the water-cooled and lithium-cooled FW/B/S concepts for ITER will be initiated to establish normal thermalhydraulic and thermomechanical performance parameters and to determine responses to off-normal conditions. Initial nuclear testing with Japan's 14 MeV neutron source will be completed to establish the effectiveness of ITER radiation shielding and the distribution of nuclear heating.
	U.S. tasks for remote maintenance and vacuum vessel (VV) R&D will be conducted as assigned. In the remote maintenance area, concepts will be developed by industry for cutting/welding of coolant pipes and approaches will be evaluated for remotely operated electrical connectors and in-vessel mapping. In the VV area, an industrial activity will begin on fabricating a full-scale mockup of the in-board VV section and on techniques for VV cutting/welding.	Work will be initiated to procure welding/cutting equipment for coolant pipes and VV sections. The mockup of the in-board VV section will be tested for hydraulic and mechanical performance and a second full-scale VV section will be fabricated by industry for testing.	Prototype welding/cutting equipment will be tested under conditions simulating the remote handling requirements for ITER assembly and maintenance. The second VV section mockup will be tested for hydraulic and mechanical performance and work will be initiated on U.S. contribution toward fabrication of a complete VV sector mockup
	U.S. work on structural materials for the first wall/blanket/shield is being conducted on agreements approved by the JCT. The test program includes: a major task to validate vanadium-chromium-titanium alloys for an advanced blanket; the irradiation performance of candidate copper alloys; planning to produce copper/steel wall material for testing; and experimental evaluation of austenitic stainless steels.	The U.S. will continue the evaluation of vanadium alloys, copper, copper-steel, and austenitic stainless steels for ITER in-vessel components. Emphasis will be on the effects of irradiation, using U.S. and Russian Federation research reactors.	Evaluation of structural materials for ITER, including vanadium, copper, and steel will emphasize fracture properties and other conditions specified by the JCT designers. Irradiation effects evaluation will continue, supplemented by base property measurements for mechanical, physical, and chemical compatibility behavior.

III. Magnetic Fusion Energy - Development and Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ITER (Cont'd)	Experimental work to define the effects of irradiation and other service variables on the properties of insulating ceramics and optical materials are under way. Irradiations in U.S. experimental facilities are used to simulate the ITER environment, and include the in-situ measurement of critical electrical properties during irradiation. The program also evaluates the change in properties after the irradiation exposure.	Insulating ceramic materials and materials for optical component systems will be under test in both separate material and component forms. Testing conditions will emphasize the effects of irradiation and other environmental factors on these materials to qualify them for use in ITER components. Irradiations in U.S. test reactors will be used to simulate ITER conditions. In-situ measurement of critical electrical properties will be included.	Evaluation of insulating ceramic and optical materials under simulated ITER service conditions will continue. These test will be conducted to qualify available materials for use in diagnostic components in ITER.
	$ 60,776	$ 67,864	$ 80,100
Plasma Technologies	In the heating area, development of 110 GHz, 1 MW gyrotron tubes will be continued and design of internal coupler will be completed. ICRH antenna design and development work will proceed in support of existing and near term fusion devices.	In the heating area, fabrication of 1 MW, 110 GHz gyrotron tube with internal coupler will be completed. ICRH antenna design and development work will proceed in support of existing and near term fusion devices. Tests of a folded waveguide antenna on a tokamak will be considered. Studies to determine heating requirements for TPX will be initiated.	The 1 MW, 110 GHz gyrotron will be tested in FY 1996, and ICRH antenna design efforts in support of near term fusion research will be slowed down.
	Advanced two-stage pellet injectors will be developed and tested.	Two-stage high speed pellet injector development will be continued.	Pellet injector development will be slowed down.
	In the plasma materials interaction area, effort is focused to provide tritium inventory support for TFTR and international collaborations. Divertor modelling support for TPX is being provided.	In the plasma materials interaction area, effort will be focused on providing plasma facing component measurements of erosion in support of TPX and beryllium fabrication for international collaborations. Divertor modelling efforts will continue.	In the plasma materials interaction area, effort will be slowed to focus only on providing plasma facing component measurements of erosion in support of TPX.
	Superconducting wire characterization test and magnet analysis are being continued. Magnet insulator development will continue. Development support for TPX magnets is being provided.	New superconducting wire characterization tests, magnet analysis, and prototype fabrication will be examined. Development support for TPX magnets will be continued.	Development support for TPX magnets will be continued.

III. Magnetic Fusion Energy - Development and Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Plasma Technologies (Cont'd)	$ 5,516	$ 6,040	$ 3,300
Fusion Technologies	Continue BEATRIX II program under an IEA agreement to test the neutron irradiation performance of candidate ceramic materials that would breed tritium in a fusion power plant. Initiate concept definition study under an IEA agreement of a Volumetric Neutron Source (VNS) facility that would be dedicated to the testing, development, and verification of nuclear components for fusion power plants. Continue international cooperative programs on U.S.-Japan testing of tritium fuel cycle components and system in TSTA.	Complete post-irradiation examination studies of ceramic breeder materials tested under the BEATRIX-II program. Initiate a conceptual design activity of VNS under an IEA agreement. Initiate planning of a cooperative activity under an IEA agreement, for R&D needed to design and construct mockups of DEMO-relevant nuclear components that will be tested in ITER. Testing in TSTA will be reduced and focussed on critical fuel cycle issues.	Continue pre-conceptual design of VNS and complete preliminary evaluations of VNS technical issues, R&D requirements, and construction costs. Begin cooperative R&D programs for R&D to design and construct mockups of DEMO-relevant nuclear components that would be tested in ITER. Conduct the DOE-JAERI Collaborative Program on tritium safety and safety technology research. Complete decontamination and decommissioning of JAERI Fuel Cleanup System. Conduct experiments on behavior of tritium releases, develop technology for tritium waste handling, tritium confinement and detriation system and materials accountability.
	$ 3,461	$ 3,337	$ 4,600
Fusion Systems Studies	The pulsed tokamak power plant design will be completed and the PULSAR report issued. Technical work on the Stellarator power plant study will be finished and the project report issued in April 1995. The new project, Starlite, undertakes preparation for the fusion power plant design, DEMO, and roll-forward assessments of needed technology R&D is beginning. Close cooperation with utility advisors continues.	Starlite project continues. A team of university, laboratory, and industrial design engineers prepare demo requirements based on definitions and purpose of the demo that were established in FY 1994. Utility advisors review DEMO planning. Design concept of DEMO endorsed by fusion community and other stakeholders. Stellarator study is completed.	Pre-conceptual system design studies of fusion demonstration power plant begin. Industrial participation and responsibility are expanded.
	$ 2,734	$ 2,450	$ 3,000

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III. Magnetic Fusion Energy - Development and Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Materials	Structural Materials for first wall/blanket/shield regions, divertor structures, and ceramics for insulating applications are under evaluation and development. Emphasis is on low activation materials meeting performance requirements, emphasizing resistance to degradation under irradiation. Evaluation of vanadium and silicon carbide are emphasized. Two active collaborations with Japan are included in the program.	Work will be expanded to develop low activation materials suitable for in-vessel structural applications in fusion power systems. Experimentation on insulating ceramics will also be continued. Low activation structural materials under study include vanadium alloys, silicon carbide composites and ferritic steels. Bilateral collaborations with Japan and Russia provide expertise and facilities to expand work in this program. Coordination of work with ITER and IEA partners is continuing.	Experimental, modeling, and theoretical work will be continued to develop low activation structural and special purpose materials for in-vessel use in fusion power systems. Planning will be completed to guide this program to the qualification of materials for a demonstration power system. Active collaborations will be continued and expanded with ITER and IEA partners.
	During 1994, the U.S. has led IEA partners and the Russian Federation in the initial stages of planning for an International Fusion Materials Irradiation Facility (IFMIF). In parallel, facility options have been evaluated and a preliminary outline of system requirements developed. A possible facility layout has been completed. The active participation of an industrial team has expanded the capabilities of a three-laboratory partnership in this work.	An active conceptual design activity will be underway to define a deuterium-lithium neutron source that will meet the needs of the ITER partners to develop materials for fusion power systems. The U.S. expects to participate in all phases of this activity, with emphasis on the accelerator technology and design integration.	Active support of the IEA led conceptual design activity of the Four ITER partners will allow completion of most of the conceptual design activity for a deuterium-lithium neutron source facility during this year. It is anticipated that some component development may also be underway, to answer the most important critical issues identified in the earlier phases of this design work.
	$ 5,463	$ 9,335	$ 9,400
Magnetic Fusion Energy - Development and Technology	$ 77,950	$ 89,026	$ 100,400

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Planning and Projects

II. A. Summary Table: Planning and Projects

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Planning and Projects	$ 38	$ 7,364	$ 6,053	$ -1,311
Total, Planning and Projects	$ 38	$ 7,364	$ 6,053	$ -1,311

II. B. Laboratory and Facility Funding Table: Planning and Projects

All Other	$ 38	$ 7,364	$ 6,053	$ -1,311
Total, Planning and Projects	$ 38	$ 7,364	$ 6,053	$ -1,311

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Planning and Projects	Funding in the amount of $4,559,000 and $152,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $6,866,000 and $343,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $5,797,000 and $166,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 38	$ 7,364	$ 6,053
Planning and Projects	$ 38	$ 7,364	$ 6,053

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Inertial Fusion Energy

Progress in inertial confinement fusion has provided confidence that net energy release in the laboratory is possible through compression, ignition, and burn of deuterium-tritium fuel microcapsules. With this background, the Department of Energy has established this Inertial Fusion Energy (IFE) subprogram to develop the potential of inertial fusion as an energy source. This activity is managed as a separate component of the Office of Fusion Energy within the Office of Energy Research.

This activity will rely on coordination with the Inertial Confinement Fusion Program in the Office of Defense Programs and has extended the Heavy Ion Fusion Accelerator Research that previously was undertaken within the Basic Energy Sciences subprogram of the Office of Energy Research. Inertial fusion is under development as a component of nuclear weapons research because it can test basic concepts of fusion explosions. The same basic concepts have the potential for commercial energy applications. The target compression and ignition physics are central to the energy concept, but will be developed under Defense Programs' activities. The heavy ion driver is specifically needed for energy applications and is supported here.

For commercial energy, a number of requirements must be met to deliver compression driving energy to the target at high efficiency and high repetition rate. For significant net energy production, the ignition and burn of a microcapsule is required to produce many times the energy required to compress the capsule. The compression driving source must have sufficient energy efficiency to allow net energy release from the system. For a reasonable energy source, the compression, ignition, and energy gain should be repeated several times each second. Thus, energy applications of inertial fusion require: high-efficiency, high-repetition-rate drivers; targets that can reliably yield useful net energy gain that can be cheaply produced; and reactor chambers to contain the micro-explosions and convert energetic fusion products to electricity.

The development of a heavy-ion driver has been the primary activity under the Inertial Fusion Energy program and a research accelerator for Induction Linac System Experiments (ILSE) was proposed, with conceptual design prepared and reviewed. Construction of that accelerator was not initiated. The FY 1996 budget supports continued heavy ion beam transport theory and experiments and the beginning of construction of Elise, the electric focus induction accelerator. The Elise accelerator will provide the capability to investigate some of the issues of the induction linac system experiments program. If those experiments are successful, the Elise accelerator can be extended to address all of the issues of this heavy-ion driver physics program.

II. A. Summary Table: Inertial Fusion Energy

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Heavy Ion Beams	$ 2,348	$ 6,660	$ 2,550	$ -4,110
Reactors and Materials	0	0	0	0
Driver Concept Development	934	1,190	550	-640
Targets for IFE	577	150	0	-150
Total, Inertial Fusion Energy	$ 3,859	$ 8,000	$ 3,100	$ -4,900

II. B. Laboratory and Facility Funding Table: Inertial Fusion Energy

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Lawrence Berkeley Lab	$ 2,562	$ 5,470	$ 2,200	$ -3,270
Lawrence Livermore National Lab	837	1,600	550	-1,050
All Other	460	930	350	-580
Total, Inertial Fusion Energy	$ 3,859	$ 8,000	$ 3,100	$ -4,900

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Inertial Fusion Energy			
Heavy Ion Beams	Efforts are directed toward technology improvements, testing of accelerator modules and pulsed power systems, and development of a full-scale alkali ion source and injector.	A decision has been made to proceed with Elise, the electric focus section of the Induction Linac Systems Experiments (ILSE) accelerator. Efforts are increased in basic technology improvements and testing of accelerator modules and pulsed power systems with improvements in the design of Elise components as one goal. Begin construction of magnetic quadrupole channel for studies of transport of full-scale alkali ion beams at low energy. Step up preconstruction R&D activities in preparation for a more optimum start of Elise accelerator construction.	Fabrication support begins on the Elise accelerator in FY 1996. Low-energy magnetic transport studies with a full-scale ion beam will be concluded. Beam theory and simulation studies continue. Research and Development Associated with Construction will continue.
	$ 2,348	$ 6,660	$ 2,550
Reactors and Materials	No activity.	No activity.	No activity.
	$ 0	$ 0	$ 0

III. Inertial Fusion Energy (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Driver Concept Development	For heavy ions, the induction linac concept is improved through use of new materials, advanced ion beam stability control, and high precision focusing. Initiate improved codes with new high performance computers to predict detailed ion beam performance, with advances in simulation of magnetic bending and focusing expected. Begin scaled experiment in ion beam recirculation.	Continue induction linac concept improvements in preparation for experiments following Elise construction and to maintain physics base during construction. High performance computers and improved codes will predict detailed ion beam performance. Scaled recirculation studies continue, including initial test of bending space-charge dominated beams. Scope out needed chamber transport experiments.	Induction linac concept improvements continue. Recirculation acceleration studies continue. Increase support for fabrication of small-scale ion ring.
	$ 934	$ 1,190	$ 550
Targets for IFE	Conceive and study inertial fusion targets tailored for energy application in collaboration with ongoing U.S. studies for defense applications. Energy specific heavy-ion target studies may begin in cooperation with European researchers.	Energy specific heavy-ion target studies can continue in cooperation with European researchers.	No activity.
	$ 577	$ 150	$ 0
Inertial Fusion Energy	$ 3,859	$ 8,000	$ 3,100

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Program Direction

This subprogram provides the Federal staffing resources and associated funding needed to plan, direct, manage, and administer the highly complex scientific and technical research and development program in fusion energy. The Fusion Energy program is developing the magnetic and inertial approaches to attaining fusion energy as two separate and distinct programs, coordinating, in the latter case, with the Office of Defense Programs. International collaboration and increasing industrial involvement are essential elements of the program strategy and require extensive coordination efforts.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 5,782	$ 6,162	$ 6,333	$ 171
Personnel Benefits	1,144	1,353	1,419	66
Travel	685	735	735	0
Contractual Services	1,315	1,350	1,113	-237
Total, Program Direction	$ 8,926	$ 9,600	$ 9,600	$ 0

II. B. Laboratory and Facility Funding Table: Program Direction

All Other	$ 8,926	$ 9,600	$ 9,600	$ 0
Total, Program Direction	$ 8,926	$ 9,600	$ 9,600	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Personnel Compensation	Provided funds for personnel compensation for 82 full-time equivalents (FTEs) in the Office of Fusion Energy and related program and management support staff at Headquarters and in the field. Includes, for example: regular salaries; lump sum payments for unused annual leave; premium pay; and employee incentive awards.	Provide funds for personnel compensation for 82 FTEs. Includes, for example: regular salaries; lump sum payments for unused annual leave; premium pay; and employee incentive awards.	Provide funds for personnel compensation for 82 FTEs. Includes, for example: regular salaries; lump sum payments for unused annual leave; premium pay; and employee incentive awards. Provide for pay increases resulting, for example, from normal within-grade increases, locality and/or general pay raises.
	Funded staff for the Office of Fusion Energy activities including: policy development; preparation of technical research and development plans; assessment of scientific needs and priorities; development and defense of budgets; review, evaluation, and funding of research proposals; monitoring, evaluation, and direction of laboratory work and allocation of resources; oversight of university and industrial research programs; and oversight of construction, ES&H, and operation of scientific R&D facilities. Supported ITER materials development, two new testing facilities, and international collaboration on ITER design activities. Continued to support TPX project coordination and strong industry involvement, IFTR D-T, and efforts to improve the tokamak concept and ensure continuing development of inertial fusion energy. Continued physics experiments and establishment of ES&H criteria for ITER. Supported and managed other ongoing program activities consistent with program missions, the Energy Policy Act of 1992, departmental priorities, and improved contractor oversight. Joined with foreign partners in planning for a	Continue program management activities as in FY 1994 with particular emphasis on the ITER and TPX projects and the research and development activities that support the program's missions. Support development of the various technologies necessary for future tokamak reactors and power plants and the development of advanced materials. Manage basic physics research activities and identify promising advanced concepts. Manage design and R&D tasks for the ITER, including ES&H. Manage other ongoing program activities including TPX activities, the D-III-D and Alcator C-Mod facilities consistent with program missions, the Energy Policy Act of 1992, departmental priorities, and improved contractor oversight, including continued development of reactor technologies for ongoing and planned facilities. Continue international collaboration on ITER particularly regarding research and development tasks, design issues, construction decisions, and site selection. Intensify activities relating to a U.S. commitment concerning construction of ITER and the related site selection activities. Continue extensive planning for the U.S. program and with foreign partners	Continue program management activities with particular emphasis on the ITER and TPX projects and the research and development activities that support the program's missions. Support development of the various technologies necessary for future tokamak reactors and power plants and the development of advanced materials. Manage basic physics research activities and identify promising advanced concepts. Manage design and R&D tasks for the ITER, including ES&H. Manage other ongoing program activities including TPX activities, the D-III-D and Alcator C-Mod facilities consistent with program missions, the Energy Policy Act of 1992, departmental priorities, and improved contractor oversight, including continued development of reactor technologies for ongoing and planned facilities. Continue international collaboration on ITER, particularly regarding research and development tasks, design issues, construction decisions, and site selection. Intensify activities relating to a U.S. commitment concerning construction of ITER and the related site selection activities. Continue extensive planning for the U.S. program and planning with foreign

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III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	comprehensive program to develop fusion energy, particularly including materials development facilities and related R&D.	for a comprehensive program to develop fusion energy, particularly including materials development facilities and related R&D.	partners for a comprehensive program to develop fusion energy, particularly including materials development facilities and related R&D.
	Provided program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, policy review and coordination, information resources management, and construction management support.	Continue to provide program and management support as in FY 1994.	Continue to provide program and management support as in FY 1995.
	Supported fusion energy activities carried out by the Chicago Operations Office, primarily at the Princeton Area Office. PAO is responsible for the operation of DOE's largest fusion laboratory, the Princeton Plasma Physics Laboratory, which operates the Tokamak Fusion Test Reactor facility. Provided increased support for the TPX activities.	Continue to support fusion energy activities carried out by the Chicago Operations Office at the FY 1994 level.	Continue to support fusion energy activities carried out by the Chicago Operations Office.
	Supported fusion energy activities at the Oakland Operations Office.	Continue to support fusion energy activities at the Oakland Operations Office.	Continue to support fusion energy activities at the Oakland Operations Office.
	$ 5,782	$ 6,162	$ 6,333
Personnel Benefits	Funded civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 1,144	$ 1,353	$ 1,419

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Travel	Provided funds for official domestic, international, and local travel. Funds transferee/new hire personnel for permanent change of station transportation. $ 685	Provide funds for official domestic, international, and local travel. Funds transferee/new hire personnel for permanent change of station transportation. $ 735	Provide funds for official domestic, international, and local travel. Funds transferee/new hire personnel for permanent change of station transportation. $ 735
Contractual Services	Provided a variety of program support such as printing and editing and contractual services, including, for example, ES&H support and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations. $ 1,315	Provide a variety of program support such as printing and editing and contractual services, including, for example, ES&H support and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations. $ 1,350	Provide a variety of program support such as printing and editing and contractual services, including, for example, ES&H support and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations. $ 1,113
Program Direction	$ 8,926	$ 9,600	$ 9,600

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Capital Equipment

The capital equipment revised request for FY 1996 of $12,479,000 supports the procurement of essential hardware for the experimental program. This permits the effective utilization of devices and people. Much of this equipment is used to support the operation of the fusion experimental devices or to make measurements and gather technical data. Some of this equipment replaces existing obsolete equipment while the remainder is new equipment. The principal equipment upgrade is for the DIII-D tokamak where the first phase of a longer term effort will be continued. When completed, DIII-D will be able to test prototype divertors for ITER and study current drive techniques relevant to ITER. Listed below is a summary of the specific capital equipment needs by sub-program.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Confinement Systems	$ 10,623	$ 5,300	$ 8,000	$ 2,700
Applied Plasma Physics	460	325	179	-146
Development and Technology	4,050	3,974	3,600	-374
Inertial Fusion Energy	386	700	700	0
Total, Capital Equipment	$ 15,519	$ 10,299	$ 12,479	$ 2,180

II. B. Laboratory and Facility Funding Table: Capital Equipment

Lawrence Livermore National Lab	656	368	280	-88
Oak Ridge National Lab	1,597	1,005	1,000	-5
Princeton Plasma Physics Lab	226	437	2,037	1,600
All Other	13,040	8,489	9,162	673
Total, Capital Equipment	$ 15,519	$ 10,299	$ 12,479	$ 2,180

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
Confinement Systems	Provide support for experimental operations of existing devices. Continue maintenance and modest upgrades to data acquisition systems by replacing/upgrading diagnostics hardware, analog to digital convertors, mass storage systems, etc., as needed for C-Mod, DIII-D, and TFTR. These funds will be used to upgrade the Fast Wave Current Drive system and to initiate the Radiative Divertor Equipment project, as a part of improvements to the DIII-D facility.	Provide support for experimental operations of existing devices. Continue maintenance and modest upgrades to data acquisition systems by replacing/upgrading diagnostics hardware, analog to digital convertors, mass storage systems, etc., as needed for C-Mod and DIII-D. A decision has been made to defer further work on the upgrade to the Fast Wave Current Drive system and to slow the pace of the Radiative Divertor hardware upgrade. Prototyping work on a long pulse microwave heating system will be initiated to upgrade the capabilities of the D-III-D facility.	Provide support for experimental operations of existing devices. Continue maintenance and modest upgrades to data acquisition systems by replacing/upgrading diagnostics hardware, analog to digital convertors, mass storage systems, etc., as needed for C-Mod and DIII-D. Fabrication of the radiative divertor will be continued. Work on a higher power upgrade of the long pulse microwave heating system will begin.
	$ 10,623	$ 5,300	$ 8,000
Applied Plasma Physics	Provide general laboratory equipment for experimental research at national laboratories including computing equipment.	Reduce general laboratory equipment at national laboratories.	Reduce general laboratory equipment at national laboratories.
	$ 460	$ 325	$ 179
Development and Technology	Special and general purpose equipment is purchased to increase the efficiency and productivity of the research and development efforts and technology test facilities.	Special and general purpose equipment is purchased to increase the efficiency and productivity of the research and development efforts and technology test facilities.	Special and general purpose equipment is purchased to increase the efficiency and productivity of the research and development efforts and technology test facilities.
	$ 4,050	$ 3,974	$ 3,600
Inertial Fusion Energy	Equipment funds are provided to support Heavy Ion Accelerator Physics Research.	Equipment funds are provided to support Heavy Ion Accelerator Physics Research.	Equipment funds are provided to support Heavy Ion Accelerator Physics Research.

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Inertial Fusion Energy (Cont'd)	$ 386	$ 700	$ 700
Capital Equipment	$ 15,519	$ 10,299	$ 12,479

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

FUSION ENERGY

I. Preface: Construction

II. A. Summary Table: Construction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Construction	$ 1,940	$ 2,000	$ 54,100	$ 52,100
Total, Construction	$ 1,940	$ 2,000	$ 54,100	$ 52,100

II. B. Laboratory and Facility Funding Table: Construction

Lawrence Berkeley Lab	$ 0	$ 0	$ 3,200	$ 3,200
Princeton Plasma Physics Lab	1,940	2,000	50,900	48,900
Total, Construction	$ 1,940	$ 2,000	$ 54,100	$ 52,100

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Construction			
Construction	Support projects at PPPL to meet health, safety, and programmatic requirements and to provide miscellaneous modifications, additions, alterations, and non-major new construction items to meet programmatic goals.	Support projects at PPPL to meet health, safety, and programmatic requirements and to provide miscellaneous modifications, additions, alterations, and non-major new construction items to meet programmatic goals.	Support projects at PPPL to meet health, safety, and programmatic requirements and to provide miscellaneous modifications, additions, alterations, and non-major new construction items to meet programmatic goals.
	No activity.	No activity.	Carry out Title I design and begin Title II design and procurement of long-lead items for the Elise heavy ion accelerator.
	No activity.	No activity.	The future of the TPX program will be evaluated by PCAST as part of its review of the fusion program. Release of construction funding will await the completion of the review. At about half the planned level of funding, final design activities will be limited to critical tokamak subsystems. The industrial management support staff located at Princeton will be fully established. Schedule slippage will occur in other areas, causing significant delays in the hardware fabrication planned for FY 1997.
	$ 1,940	$ 2,000	$ 54,100
Construction	$ 1,940	$ 2,000	$ 54,100

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IV. A. Construction Funded Project Summary

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
GPE-900	General Plant Projects	$ XXX	$ 1,924	$ 2,000	$ 1,000	$ 0	$ 1,000
96-E-310	Elise Project	0	0	0	3,200	17,000	20,200
94-E-200	Tokamak Physics Experiment (TPX)	0	0	0	49,900	560,100	610,000
Total, Fusion Energy		$ 0	$ 1,924	$ 2,000	$54,100	$577,100	$631,200

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: GPE-900 General Plant Projects, Various locations — TEC: $ 1,000, TPC: $ 1,000

Start Date: 1st Qtr. FY 1996 — Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriated	Obligations	Costs
1996	$ 1,000	$ 1,000	$ 1,000

3. This project supports many small alterations, additions, modifications, replacements, and non-major new construction items required annually to provide continuity of operation, improvement in economy, road and structure improvements, elimination of health and safety hazards, minor changes in operating methods, and protection of the Government's significant investment in facilities. The FY 1996 General Plant Projects funding will also support high priority ES&H activities identified in the Department's ES&H Five Year Plan. Currently the estimated distribution for FY 1996 by laboratory is as follows:

Princeton Plasma Physics Laboratory..... $ 1,000

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request
Construction	$ 0	$ 1,940	$ 2,000	$ 1,000

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 96-E-310 Elise Project
Lawrence Berkeley Laboratory
Berkeley, California

TEC: $20,200
TPC: $25,900

Start Date: 2nd Qtr. FY 1996 Completion Date: 3rd Qtr. FY 2000

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriated	Obligations	Costs
1996	$ 3,200	$ 3,200	$ 3,150

3. Narrative:

(a) The Elise Project, a linear heavy ion induction accelerator facility, will produce intense ion beams to test many of the features of a heavy-ion induction accelerator "driver" for inertial fusion energy (IFE) production.

(b) The Elise Project consists of the design, procurement and construction of a new heavy ion linear accelerator with its ancillary equipment and the modifications to the conventional facilities to house it.

(c) The Elise Project and its ensuing experimental program will be the main effort in the driver development plan during the next several years.

(d) The Elise accelerator will be capable of carrying out many, but not all, of the experiments proposed for the program of induction linac systems experiments, whose goal is to resolve the physics issues of heavy ion driver for Inertial Fusion Energy.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction	$ 0	$ 0	$ 0	$ 3,200	$ 17,000
Capital Equipment	0	0	0	0	0
Operating Expenses	0	260	3,100	450	1,890

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: 94-E-200 Tokamak Physics Experiment, Princeton Plasma Physics Laboratory, Plainsboro, New Jersey

TEC: $610,000
TPC: $742,000

Start Date: 1st Qtr. FY 1994 Completion Date: 4th Qtr. FY 2001

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriated	Obligations	Costs
1996	$ 49,900	$ 49,900	$48,000

3. Narrative:

(a) TPX has a dual mission of steady state and advanced tokamak operation. It is designed to develop and demonstrate optimized steady state operation modes that would provide the basis for a more attractive DEMO.

(b) The TPX project also supports the schedule and technical objectives of the International Thermonuclear Experimental Reactor program and enables the U.S. to remain an important major participant and contributor to the international fusion program.

(c) The design of TPX will be based on a reconfiguration of the Tokamak Fusion Test Reactor (TFTR) facilities into a steady state advanced tokamak using many of the existing TFTR facilities, following the TFTR shutdown and decommissioning.

(d) The funding request in FY 1996 is for Title I Design activities to be completed and detailed Title II design to start.

(e) The start of TPX construction will await completion of the PCAST review and a determination by the President as to the appropriate future strategy for the U.S. Fusion Program.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction	$ 0	$ 0	$ 0	$49,900	$ 560,100
Capital Equipment	0	0	0	0	0
Operating Expenses	12,800	19,200	42,000	12,192	45,808

OVERVIEW

BASIC ENERGY SCIENCES

The Basic Energy Sciences (BES) program supports basic scientific research that is crucial to achieving the goals of the Department of Energy and those described in the Energy Policy Act of 1992 and in the High Performance Computing Act of 1991 (Public Law 192-104). The main activities in BES are to conduct energy-related research, to design, construct and operate necessary scientific facilities for DOE and other users, and to support an information technology infrastructure for collaborative research. The research funded by the BES program utilizes the expertise of the national laboratories, universities, industry, and basic science for other government agencies.

SCIENCE FACILITIES UTILIZATION ENHANCEMENT: The Basic Energy Sciences request includes $60,000,000 to enhance the utilization of the Department's fundamental science and user facilities. This investment will significantly increase research time available to thousands of scientists in universities, Federal agencies, and U.S. companies. It will also leverage both Federally and privately sponsored research, consistent with the Administration's strategy for enhancing the U.S. National science investment. This increment is part of a $100 million science initiative to increase the utilization of the Department's large state-of-the-art science facilities. The proposed funding increases the number of users served in FY 1996 by several thousand over FY 1995 levels, and will significantly enhance the quality of service and availability of facility resources to users, including university and government scientists, as well as private companies who rely on unique BES facilities for their basic research needs. The proposed funding level will also result in a more rational and efficient utilization of such high technology facilities, which are generally oversubscribed by factors of two to three. Research communities that will benefit from this initiative include structural biology, materials sciences, superconductor technology, and medical research and technology development.

The following summary highlights the Basic Energy Sciences program encompassed within the FY 1996 request:

o The seven major user facilities would be operated at an enhanced level. The Manuel Lujan, Jr., Neutron Scattering Center (MLNSC) facility will operate with Defense Programs providing funds for Los Alamos Meson Physics Laboratory (LAMPF).

o The 6-7 GeV Synchrotron Radiation Source will continue to be constructed at Argonne National Laboratory (ANL).

o The High Performance Computing Research Centers, at Oak Ridge National Laboratory and Los Alamos National Laboratory, will both operate prototype computational systems providing support to approximately eight grand challenge class computational energy projects and the National Energy Research Supercomputer Center at Lawrence Livermore National Laboratory will begin work to transition a prototype massively parallel computing system into a production environment.

o The overall budget for Capital Equipment is increased to support the high priority needs of the program. The budget for General Plant Projects is increased to support high priority ES&H activities identified in the Department's Five Year Plan. The budget for Accelerator and Reactor Improvements and Modifications projects is increased to include upgrades of beamline instrumentation at NSLS, HFBR, HFIR, and ALS, and to provide for a new spallation target for the IPNS at ANL.

o Funding for the Combustion Research Facility, Phase II, initiated in FY 1987, is requested with project completion scheduled for FY 1999.

o Basic Energy Sciences will have an important role in three new initiatives: the PARTNERSHIP FOR NEW GENERATION VEHICLES (PNGV), ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS/SUSTAINABLE DEVELOPMENT, and SCIENCE FACILITIES UTILIZATION ENHANCEMENT.

o Provides for research and development and conceptual design activities for a spallation neutron source with the preferred alternative site being Oak Ridge National Laboratory.

The FY 1996 research program will emphasize SUSTAINABLE DEVELOPMENT. There is now general recognition that to achieve SUSTAINABLE DEVELOPMENT for products and processes for the future, protection of health and the environment will have to be incorporated from the beginning. In FY 1996, Basic Energy Sciences will start a new thrust in basic research to underpin development of new processes and products that take into account the complete lifecycle of things we make. Included will be basic research supporting the development of advanced batteries with long lives and less polluting materials; near-net-shape casting of metals and isostatic pressing of ceramics to eliminate grinding to size and thereby minimize the amount of hazardous waste particulate matter, catalysts for processes to improve the efficiency of fuels production and reductions in the emissions of pollutants from utilization; improved separation of wastes and their conversion into useful products; environmentally compatible biosynthetic components and processes; manufacturing processes with real-time automated monitoring, control and replacement systems; and improved geophysical characterization to better understand subsurface structure and fluids in reservoirs to guide exploration and predict contaminant flow.

Results from BES sponsored basic research become an integral part of the information base that underpins the Nation's energy technology development. The BES program strengthens the Nation's science and engineering foundation by training future scientists and providing improved environmental quality, better health and quality of life, economic competitiveness through the transfer of information and technology, energy self-sufficiency, and national security. The BES program is also at the forefront in the development of computational science as a new paradigm of research, complementing theory and experimentation. The research in the BES program is grouped into six major subprogram areas: Materials Sciences, Chemical Sciences, Engineering and Geosciences, Advanced Energy Projects, Energy Biosciences, and Applied Mathematical Sciences.

Much of the research sponsored by the BES program is driven by information needs that limit existing energy technologies. The link between basic research and applications, however, is typically not confined to any single energy or technological problem, but has applications to a number of technologies. For example, a new or improved heat transfer device may be applied to fossil, nuclear, solar or geothermal energy systems. Advances in high temperature superconducting materials also may be applied to a number of energy technologies, such as more efficient motors, generators, power transmission lines and transportation systems. These improvements will have tremendous economic and energy savings. Each of the subprograms in BES support research projects with similarly broad applications across a range of energy technologies. Whether attempting to burn coal cleaner or more cheaply, or to find ways to reduce the overall volume or hazards from wastes, nuclear or non-nuclear, solutions will ultimately depend on advances in basic research and the applications of those advances to energy technologies. The BES research program annually supports approximately 1,400 individual research projects at over 200 separate institutions, with direct support for over 4,000 investigators and 2,300 graduate students in the physical, biological, and mathematical sciences. These projects are selected on the basis of scientific excellence using peer review procedures, relevance to support of the DOE Strategic Plan, and their contribution to the goals of the Energy Policy Act of 1992.

Research is supported at national laboratories, universities and other institutions. Approximately one-fourth of BES funding supports university-based research directly. The list of universities receiving support covers almost every state and includes participation by both large and small institutions. All BES funded programs are rigorously peer-reviewed on a periodic basis. BES laboratory programs generally must minimally exploit one of three criteria: (1) complementary basic and applied research being supported at the same institution so as to maximize the likelihood of technology transfer; (2) multidisciplinary team expertise not ordinarily available within a university; or (3) the use of a large on-site National user facility. BES university grants tend to be oriented towards the training of young professionals for scientific and technological careers, and to be involved with forefront, cutting edge research. The facility component supports the operation of seven major user facilities. In addition, the FY 1996 facility request provides for the continuation of construction of an advanced x-ray radiation light source, the 6-7 GeV Synchrotron Radiation Source, at ANL. All activities related to the Advanced Neutron Source appear in a separate budget.

In addition to universities and national laboratories, BES supports research in and maintains ties with industry. Representatives from different industries serve on the BES Advisory Committee; experts from industry participate in the review of research proposals and use the specialized facilities sponsored by BES; industrial scientists participate in program advisory committees at the national laboratories; industry representatives are invited to attend BES conferences and workshops on special topics; and BES research programs are involved in over 500 collaborations with industries, including the automobile companies, energy companies, pharmaceutical companies, electronic companies, etc.

The BES program operates unique facilities that are available to a wide array of user groups. These major facilities account for a significant amount of the BES budget requirement. In general, facility costs have risen by an amount greater than the cost of living. These higher costs

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can be attributed to higher utility costs, safety requirements, and higher user demands, as well as the cost of cutting-edge equipment. At the seven major user facilities funded by the BES program, the number of users is over 4,000 from industry, academia and federal laboratories in FY 1995. These facilities are the High Flux Beam Reactor (HFBR) and the National Synchrotron Light Source (NSLS) at Brookhaven National Laboratory, the Combustion Research Facility (CRF) at Sandia National Laboratories, Livermore, the High Flux Isotope Reactor (HFIR) and the Radiochemical Engineering Development Center (REDC) at Oak Ridge National Laboratory, the Stanford Synchrotron Radiation Laboratory (SSRL) at the Stanford Linear Accelerator Center, the Intense Pulsed Neutron Source (IPNS) at Argonne National Laboratory and the Advanced Light Source (ALS) at Lawrence Berkeley Laboratory.

These BES facilities support research conducted by a number of top U.S. universities and U.S. corporations (e.g., IBM, AT&T, Exxon, GM). These users sponsor major research teams in areas such as catalysis, electronics, polymers, and biomedicine. Results from these research efforts, including user facility based research funded in the Biological and Environmental Research program, are important not only to those institutions, but also to the Department. At the neutron sources, major companies and universities are doing research in structural biology and in superconductivity; research is also supported that evaluates radiative effects on materials important to fission, fusion, and radioactive waste technology. At the HFIR, important and unique isotopes are produced for scientific, medical and industrial use.

In order to make further progress in certain fields, more advanced facilities are required. One facility has been identified by the scientific community as being the most critical to the future needs of the Department's Basic Energy Sciences program: the 6-7 GeV Synchrotron Radiation Source, currently being constructed at the Argonne National Laboratory.

BES has as its principal goals:

o Focus of the research effort on: energy related activities identified in the DOE Strategic Plan with emphasis on the Science and Technology, Industrial Competitiveness, and Energy Resources business lines; and the Energy Policy Act of 1992; and on a multidisciplinary approach with participation of several subprograms, as appropriate.

o Completion of advanced scientific facilities for the Nation and safe and productive operation of the BES facilities.

o Demonstration of energy-related national challenge application in energy demand management for the National Information Infrastructure.

o Enhance the balanced approach to BES activities between research and facilities through growth in both areas where opportunities exist.

o Enhancement of math and science education - the BES program provides support for about 2,300 graduate students and 2,000 academic professors and post-doctoral researchers.

o Promote information and technology transfer.

The Department has developed performance measures for the results of its basic research activities. General performance measures of program outputs for basic research include such metrics as the number of scientists supported, the number of students earning advanced degrees, the number of scientific publications in peer-reviewed journals, the number of awards from professional organizations, and the number of citations in scientific publications. Metrics for the transfer of new knowledge to a technology application include the number of cooperative agreements with industry, the number of projects resulting in support from a DOE Energy Technology program, the number of invention records and patents, and the number of industry users at the major scientific user facilities. For construction projects, metrics can include costs and schedule milestones completed against approved project baselines. These performance measures are easily tabulated, commonly used, and begin to provide a framework for evaluating program efficiency. However, the most descriptive indicators in this area are qualitative rather than quantitative measures. In order to measure outcomes, or program effectiveness, the impact of the research outputs must be assessed in terms of the quality of the new knowledge gained, its usefulness to technology development, and its longer-term benefit to society. Although there are limited and expensive methods for evaluating the quality of science through peer-review metrics, no metric exists that can accurately measure science's impact on technology and society. The extent of industrial interest is a measure of the value of the research. BES has been involved in over 500 collaborations with industry. These collaborations extend over all sectors of the economy.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative in whole dollars.)

LEAD TABLE

Basic Energy Sciences

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
Materials Sciences	$259,569	$275,721	-$3,402	$272,319	$348,297
Chemical Sciences	158,879	163,513	-3,935	159,578	181,565
Engineering and Geosciences	35,537	36,837	-992	35,845	39,953
Advanced Energy Projects	10,697	11,085	-274	10,811	12,026
Energy Biosciences	25,464	28,957	-1,021	27,936	29,534
Applied Mathematical Sciences	99,051	109,367	-1,251	108,116	108,688
Program Direction	9,120	9,900	0	9,900	10,000
Subtotal Operating Expenses	598,317	635,380	-10,875	624,505	730,063
Capital Equipment	43,544	41,537	-2,481	39,056	56,973
Construction	115,942	70,379	0	70,379	24,383
Subtotal Program	$757,803	$747,296	-$13,356	$733,940	$811,419
Adjustment	-14,213 a/	-8,839 a/	0	-8,839 a/	0
Total Program	$743,590 b/	$738,457	-$13,356	$725,101	$811,419

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

b/ Excludes $8,784,000 which has been transferred to the SBIR program and $293,000 which has been transferred to the STTR program.

	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Summary					
Operating Expenses	$585,104	$631,200	-$10,875	$620,325	$730,063
Capital Equipment	42,544	40,678	-2,481	38,197	56,973
Construction	115,942	66,579	0	66,579	24,383
Total Program	$743,590	$738,457	-$13,356	$725,101	$811,419
Staffing (FTEs)					
Headquarters	71	77	0	77	78
Field	5	7	0	7	7
Total	76	84 c/	0	84	85

c/ Revised request.

Authorization: Section 209, P.L. 95-91, "Department of Energy Organization Act"

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

SUMMARY OF CHANGES

Basic Energy Sciences

FY 1995 Appropriation	$ 747,296
- Adjustment	- 13,356
FY 1995 Adjusted	$ 733,940

Operating Expenses

- Increased funding is provided for the 6-7 GeV to continue advanced commissioning of the storage ring, the insertion devices and several beamlines leading to the initial operating phase of this facility	+ 17,620
- Enhances operation of major user facilities (HFBR, HFIR, REDC, NSLS, CRF, IPNS, SSRL, ALS)	+ 29,739
- The Manuel Lujan, Jr., Neutron Scattering Center operations will be restored. It is assumed that DOE Defense Programs will provide funds for LAMPF operations	+ 6,970
- Continues support for the High Performance Computing and Communications program, including support of the National Information Infrastructure (NII) program. This budget reflects a one year shift of $2,000,000 from operating expenses to capital equipment to support the acquisition of a disk/archival mass storage system at NERSC	- 2,428
- Provides for research and development and conceptual design activities for a spallation neutron source with Oak Ridge National Laboratory as the preferred alternative site	+ 8,000
- Increased support for research and instrumentation at major user facilities	+ 13,557
- Program Direction funds provided for support of staff needed to monitor and manage program	+ 100
- Support research relating to a new initiative on the PARTNERSHIP FOR NEW GENERATION VEHICLES	+ 8,000

- Support research relating to ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS/ SUSTAINABLE DEVELOPMENT..... + 24,000

Capital Equipment

- Increased equipment funding associated with the 6-7 GeV Synchrotron Radiation Source construction project is provided, as detailed in the construction project data sheet..... + 3,358

- Continues equipment needs associated with the High Performance Computing and Communications activities. This budget reflects a one year shift of $2,000,000 from operating expenses to capital equipment to support the acquisition of a disk/archival mass storage system at NERSC..... + 775

- Additional beamlines will be provided at NSLS, SSRL, ALS, HFBR, and HFIR to meet the growing demand for x-rays and neutrons. Enhancements will be provided to the Ames Materials Preparation Center, the Illinois Center for Microanalysis of Materials, the ORNL shared instrumentation program, and electron microscopy centers at LBL and LLNL. Additional funds are also provided for peripheral and test equipment to support the operation of NERSC..... + 11,303

- Increased equipment funding associated with research in the following subprograms: Materials Sciences, Chemical Sciences, Engineering and Geosciences, Advanced Energy Projects, and Energy Biosciences..... + 2,481

Construction

- Complete construction of the 6-7 GeV Synchrotron Radiation Source..... - 55,193

- Increased funding for Accelerator and Reactor Improvements and Modifications projects to include upgrades of beamline instrumentation at NSLS, HFBR, HFIR, and ALS, and to provide for a new spallation target for the IPNS at ANL..... + 5,383

- Increased funding for General Plant Projects to address the high priority needs of the program and to address high priority ES&H activities as identified in the Department's Five Year Plan..... + 1,814

- Provides funding for the Combustion Research Facility, Phase II, initiated in FY 1987, with project completion scheduled for FY 1999..... + 2,000

FY 1996 Congressional Budget Request..... $ 811,419

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I. Preface: Materials Sciences

The Materials Sciences subprogram supports fundamental scientific research into materials and their properties, and national user facilities that enable experiments to examine these materials. It creates knowledge necessary for removing scientific and technological barriers. Every technology is materials-limited and new materials can lead to new energy, automotive and environmental technologies and markets. The Materials Sciences subprogram addresses the materials needs for making the generation, conversion and conservation of energy more efficient, cost effective, safe, reliable, and environmentally acceptable.

Materials Science is an enabling technology. The performance parameters, economics, environmental acceptability and safety of all energy generation, conversion, transmission, and conservation technologies are limited by the performance of materials. This performance statement also pertains to automotive technologies, the safe and reliable transport, containment and storage of hazardous substances and the minimization of wastes in the synthesis and processing of commercial materials. Research in Materials Sciences is concerned with optimizing the behavior and performance of materials in these technologies. This research seeks to understand the synergistic relationship among the synthesis, processing, structure, properties, and behavior of a diverse range of materials in order to discover new technological capabilities. The subprogram supports efforts to find the optimal parameters for producing materials and accurately predicting their performance under conditions that will enable improvements in industrial technologies.

The basic research supported by the Materials Sciences subprogram seeks to understand the synergistic relationship between synthesis, processing, structure, properties of materials and development of new materials. One goal is to develop strategic, efficient, methods for the synthesis, processing, fabrication, quality manufacture and recycling of materials for technologically important applications.

Strong efforts are underway across the entire Materials Sciences subprogram in areas such as high-temperature superconductivity, solid electrolytes for batteries and fuel cells, corrosion resistance, mechanical behavior and failure resistance, photovoltaics, magnetic behavior, joining and welding, nanostructure materials, hard and wear resistant surfaces, engineered polymers, high-rate metal forming, and non-destructive evaluation. A common denominator to virtually all of these activities is the ultimate objective to improve the performance of materials under the operating conditions necessary for cost-effective performance that concurrently require increased factors of safety and minimization of health and environmental risk.

Research supported by Materials Sciences has led to 93 Cooperative Research and Development Agreements.

SUSTAINABLE DEVELOPMENT activities will take into account the total product lifecycle including synthesis, processing, fabrication, manufacture, and recycling of materials, with due consideration to waste minimization and containment, and quality manufacture, which will impact many strategic industries, such as the automotive industry, where materials is a critical enabling technology. Another SUSTAINABLE DEVELOPMENT thrust is on-line non-destructive evaluation of manufacturing processes with feed-back and instantaneous control of manufacturing parameters to provide total quality manufacturing assurance.

The Materials Sciences subprogram supports the operation of unique facilities that are not otherwise available to the scientific community which includes the private industrial sector, universities, and both DOE and other federal laboratories. In addition to users from the materials community, other users come from a broad range of disciplines including the chemical, biological, life sciences and geological communities. These facilities permit this broad spectrum of scientists to carry out investigations and procedures involving synchrotron radiation, neutron scattering, and electron beam microcharacterization. As long as the results of industrial research at DOE user facilities are made available to the scientific community and are of interest to DOE, there is no charge imposed on user groups for the use of these facilities. The construction

I. Materials Sciences (Cont'd)

and operation of these facilities are critical to national competitiveness. In 1993 there were 4,637 scientists (including 597 from 89 U. S. companies) who conducted X-ray and neutron beam experiments at user facilities supported by the Office of Basic Energy Sciences.

The Materials Sciences subprogram plays a lead role in representing Department of Energy programs in materials sciences to the National Science and Technology Council's Committee on Civilian Industrial Technology (NSTC/CIT) which coordinates materials R&D activities throughout the Federal government. This lead role consists of coordinating and integrating the input from approximately twenty different Department of Energy program offices to the NSTC/CIT. Within DOE, various materials science and technology programs are coordinated through the Energy Materials Coordinating Committee and its various topical subcommittees.

The Materials Sciences subprogram will have an important role in two initiatives: the PARTNERSHIP FOR NEW GENERATION VEHICLES (PNGV), and ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS.

Some examples of research accomplishments during the past year include the development of a new environmentally acceptable lead-free solder, development of an on-line system to prevent tearing during the forming of sheet metal, the development and commercialization of superconducting quantum interference devices that are able to detect small flaws in aircraft parts, the development of positron diagnostics to detect invisible weather damage in commercial polymer coatings, the development of a computer simulation technique to identify new commercial aluminum alloys and to design their commercial fabrication process parameters, the discovery of new rare-earth based alloys which improve the efficiency of magnetic refrigeration by about 30% and reduce the materials' cost by about 40%, the first complete identification of all of the major molecular forms of sulfur in coal by means of synchrotron X-ray probes, the development of an advanced method of synchrotron X-ray lithographic fabrication of computer chips with higher resolution and greater density than those made with conventional X-ray processing, discovery of a new and important catalyst formed from a molybdenum-sulfur cluster in a zeolite cage, development of a lithium thin film battery with unprecedented performance parameters that is now being commercialized, the development of commercial ion beam processing technology for orthopedic materials, the first-time production of large ingots of metallic glass, the development of a thermoacoustic refrigerator that does not use freon or any other environmental pollutant, the development of new commercial polymer blend products by means of small-angle neutron scattering, the development of a three-dimensional simulation model for predicting the shape of a weld pool for a single-pass weld, the development of a new class of highly efficient semiconductor lasers, a world record high efficiency solar cell, a significant advancement in the understanding of the mechanism of sulfur induced corrosion of steel, the solution of the brittleness problem in a newly discovered whisker reinforced structural ceramic, and development of a new method of forming aluminum layers with strengths comparable to high strength steels.

II. A. Summary Table: Materials Sciences

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Materials Sciences Research	$ 135,777	$ 138,365	$ 169,571	$ 31,206
Facilities Operations	123,792	133,954	178,726	44,772
Total, Materials Sciences	$ 259,569	$ 272,319	$ 348,297	$ 75,978

II. B. Laboratory and Facility Funding Table: Materials Sciences

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Ames Lab	$ 9,637	$ 9,182	$ 9,790	$ 608
Argonne National Lab (East)	76,214	88,189	111,208	23,019
Brookhaven National Lab	48,662	47,920	54,804	6,884
Idaho National Engineering Lab	404	415	518	103
Lawrence Berkeley Lab	37,786	36,126	46,333	10,207
Lawrence Livermore National Lab	2,361	2,585	2,760	175
Los Alamos National Laboratory	8,909	6,834	13,929	7,095
Oak Ridge National Lab	22,342	21,478	30,674	9,196
Pacific Northwest Lab	3,423	3,374	3,565	191
Sandia National Laboratories	8,230	7,867	8,099	232
All Other	41,601	48,349	66,617	18,268
Total, Materials Sciences	$ 259,569	$ 272,319	$ 348,297	$ 75,978

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Materials Sciences			
Materials Sciences Research	Metallurgy and Ceramics Research - Continued effort on understanding synthesis-processing-structure-property relationships in ceramic superconductors. Increased thrusts in safety and reliable performance of materials. Continued efforts on corrosion resistant materials, surface modification to improve friction and wear, modelling of near-net shape fabrication processes for complex materials systems, welding and joining of metallic and ceramic materials, materials for radiation environments, synthesis and processing of photovoltaic materials, and high temperature structural ceramics.	Metallurgy and Ceramics Research - Continue effort on understanding synthesis-processing-structure-property relationships in ceramic superconductors. Sustain thrusts in safety and reliable performance of materials. Continue efforts on surface modification to improve friction and wear, modelling of near-net shape fabrication processes for complex materials systems, welding and joining of metallic and ceramic materials, materials for radiation environments, synthesis, processing and behavior of photovoltaic materials, and high temperature structural ceramic composites. Increased thrusts of synthesis and processing of metals and ceramics, aqueous corrosion, and high-temperature gaseous corrosion and erosion.	Metallurgy and Ceramics Research - Continue effort on understanding synergistic relationship between synthesis-processing-structure-properties, behavior, performance and recycling of metals and ceramics for strategic energy, environmental, and automotive needs. Sustain thrusts in safety and reliable performance of materials. Continue efforts on surface modification to improve friction and wear, modelling of near-net shape fabrication processes for complex materials systems, welding and joining of metallic and ceramic materials, materials for radiation environments, synthesis, processing and behavior of solar photovoltaics, and high temperature structural ceramic composites. Continue efforts in aqueous corrosion, and high temperature gaseous corrosion and erosion.

III. Materials Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Materials Sciences Research (Cont'd)			Initiate effort on on-line non-destructive evaluation monitoring of manufacturing processes. Increased support for instrumentation and research at major user facilities.
	Solid State Physics Research - Continuation of high priority research within the DOE mission especially in neutron scattering and synchrotron light sources. Continued efforts in the physics of high-temperature superconductivity, radiation effects, and the development of novel characterization methods. Continued efforts on the physics of surfaces and interfaces. Enhanced emphasis on new materials with energy-related properties. Enhanced emphasis in magnetic and photovoltaic materials. Enhanced effort to develop beamlines for the Advanced Light Source (ALS) and the 6-7 GeV Synchrotron Radiation Source (6-7 GeV).	Solid State Physics Research - Continuation of high priority research within the DOE mission especially in neutron scattering and synchrotron light sources. Continued efforts in the physics of high-temperature superconductivity and radiation effects at the same level, and the development of novel characterization methods. Continued efforts on the physics of surfaces and interfaces. Continued emphasis on new materials with energy-related properties. Continued emphasis on thrusts in magnetic and photovoltaic thin film materials. Continued emphasis on beamline development.	Solid State Physics Research - Continuation of high priority research within the DOE mission especially in neutron scattering and synchrotron light sources. Continued efforts in the physics of high-temperature superconductivity, the physics of surfaces and interfaces, and development of novel characterization methods. Continued emphasis on new materials with energy-related properties. Continued emphasis on the development of beamlines for ALS and the 6-7 GeV. Enhanced emphasis in magnetism, and magnetic, photonic and photovoltaic materials. Increased support for instrumentation and research at major user facilities.
	No activity.	No activity.	Provides $8 million for R&D and conceptual design activities for a spallation neutron source. The preferred alternative site for the spallation source would be Oak Ridge National Laboratory, to maximize the use of neutron source design expertise already developed through the preparation of the ANS conceptual design, and to take advantage of the laboratory's experience in operating particle accelerators and conducting neutron scattering research. The spallation source research and development effort will make use of the best capabilities in the DOE laboratories, including the Defense Programs' Accelerator Production of Tritium (APT) project at Los Alamos

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III. Materials Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Materials Sciences Research (Cont'd)			National Laboratory. Without a major new neutron source or upgraded operation of an existing research reactor, the United States will forego significant scientific, technical, and economic benefits that derive from neutron scattering and materials irradiation research and the production of medical isotopes. A spallation neutron source should enable the Nation to carry out major research activities in areas such as biology, materials science, superconductivity, pharmaceuticals, electronic materials, and many other technological areas that are critical for future U.S. economic competitiveness and national security.
	Materials Chemistry Research - Continued emphasis on research including synthesis and characterization of novel organic and inorganic superconductors and magnetic materials, synthetic metals, surfaces and interfaces, polymers and materials synthesized by biological processes. New programs have been developed in the synthesis of biomolecular materials, novel ferromagnets, superconductors, and synthetic metals. There was an enhanced effort to provide beamline support for the ALS and 6-7 GeV.	Materials Chemistry Research - Continued emphasis on research including synthesis and characterization of nanoscale materials based on novel cluster chemistry, organic ferromagnets, novel organic/inorganic superconductors, synthetic metals, surface chemistry of interfaces, polymers and materials synthesized by biological processes. Continued emphasis on understanding friction, lubrication, and corrosion. Programs will be developed in the synthesis of biomolecular materials, novel ferromagnets, and synthetic metals. Continued effort to support beamlines at neutron and synchrotron light sources.	Materials Chemistry Research - Continued emphasis on research including synthesis, processing, and characterization of polymers, organic ferromagnets, fullerene derivatives, nanocluster materials, organic and inorganic superconductors. Emphasis will be continued in surface chemistry including corrosion, electrochemistry, the molecular understanding and control of lubrication and friction, new oxides, nitrides, and sulfides, biomolecular materials and neutron, X-ray , and NMR characterization of organic materials. New emphasis will be given to polymer composites and nanostructural materials. Continued beamline development. Increased support for instrumentation and research at major user facilities.

III. Materials Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Materials Sciences Research (Cont'd)	No activity.	No activity.	The PARTNERSHIP FOR NEW GENERATION VEHICLES encompasses four research areas in Materials Sciences: Advanced manufacturing including investigations into the solidification, casting and welding of recyclable light-weight alloys; high-rate plastic and super-plastic forming of light-weight sheet metal; on-line control of processing and manufacturing parameters for total quality manufacturing; synthesis and processing of light-weight high-strength polymers, polymer matrix composities, and wear-resistant light-weight structural ceramics and composites. Reduction of mechanical losses including stress fatigue and service lifetime in recyclable metals, intermetallics, and structural ceramics; deformation and fracture (crash resistance). Light-weight materials including corrosion of recyclable light-weight metals, metal matrix composites; high magnetic strength energy efficient magnetic materials. Energy conversion and storage including sensors and catalysts; solid electrolytes for batteries and development of light-weight batteries and fuel cells.
	No activity.	No activity.	ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS includes two Materials Sciences research categories: Waste minimization in the synthesis and processing of materials includes environmentally benign synthesis routes for polymers, ceramics and semiconductors; near net shape forming processes for ceramics and metals to minimize or eliminate grinding wastes; and less toxic procedures and filler materials for welding, soldering, and brazing. Safety and reliable containment of hazardous wastes

III. Materials Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Materials Sciences Research (Cont'd)			includes research on fracture toughness and crash resistance and corrosion prevention of welded containers; development of remote, non-destructive diagnostics for the detection and analysis of trace quantities of hazardous substances.
	EPACT: EPACT Section 2201 "National Advanced Materials Initiative:" The Basic Energy Sciences program conducted research related to the goals of EPACT in the area of advanced materials. INVESTMENT: Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $3,870,000 and $129,000 has been transferred to the SBIR program and the STTR program, respectively.	EPACT: EPACT Section 2201 "National Advanced Materials Initiative:" The Basic Energy Sciences program conducts research related to the goals of EPACT in the area of advanced materials. INVESTMENT: Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $5,408,000 and $270,000 has been budgeted for the SBIR program and the STTR program, respectively.	EPACT: EPACT Section 2201 "National Advanced Materials Initiative:" The Basic Energy Sciences program conducts research related to the goals of EPACT in the area of advanced materials. INVESTMENT: Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $6,966,000 and $522,500 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 135,777	$ 138,365	$ 169,571

III. Materials Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Facilities Operations	Continued support for major facilities in the Materials Sciences subprogram with increased funding for first full year of operation for the Advanced Light Source (LBL). Provided increases needed for R&D and commissioning of components of the 6-7 GeV Synchrotron Radiation Source (ANL). Began workshops and meetings leading to a conceptual design of a pulsed spallation neutron source. (For more detail on Facilities Operations see the Major User Facilities section following the Construction section.)	Continues support for major facilities in the Materials Sciences subprogram. Provides increases needed for R&D and commissioning of components of the 6-7 GeV Synchrotron Radiation Source (ANL). (For more detail on Facilities Operations see the Major User Facilities section following the Construction section.)	Enhanced support for major user facilities in the Materials Sciences subprogram. Provides increases needed for final commissioning of the 6-7 GeV Synchrotron Radiation Source (ANL). Restores operation of Manuel Lujan, Jr., Neutron Scattering Center. (For more detail on Facilities Operations see the Major User Facilities section following the Construction section).
	EPACT:	EPACT:	EPACT:
	EPACT Section 2203(a)(2)(a) "Supporting Research and Technical Analysis:"	EPACT Section 2203(a)(2)(a) "Supporting Research and Technical Analysis":	EPACT Section 2203(a)(2)(a) "Supporting Research and Technical Analysis":
	Provided funds for operation of user facilities to provide special scientific and research capabilities to serve the research needs of the Nation's universities, industry, private laboratories, federal laboratories, and others.	Provides funds for operation of user facilities to provide special scientific and research capabilities to serve the research needs of the Nation's universities, industry, private laboratories, federal laboratories, and others.	Provides funds for operation of user facilities to provide special scientific and research capabilities to serve the research needs of the Nation's universities, industry, private laboratories, federal laboratories, and others.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.
	$ 123,792	$ 133,954	$ 178,726
Materials Sciences	$ 259,569	$ 272,319	$ 348,297

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Chemical Sciences

The Chemical Sciences subprogram supports a broad range of basic research in molecular, atomic and chemical engineering sciences necessary for improvements in existing energy technologies and development of new energy technologies. Major chemical sciences research efforts are important to more efficient conversion of solar energy to fuels or electricity; improved combustion processes; better utilization of carbonaceous resources including natural gas, oil, coal and biomass; new and better approaches to environmental management; more efficient catalytic processes for producing fuels and chemicals; more sensitive and specific monitoring of physical and chemical processes; and the advancement of fission and fusion concepts. The subprogram is divided into activities which are described below. In addition, Chemical Sciences provides support for major scientific user facilities which are operated for the benefit of the entire U. S. scientific community.

Recent examples of research results that may have significant technological impact may be cited. A new catalyst for the conversion of methane, the principal component of natural gas, to methanol, a transportable liquid fuel, has now been pilot plant tested and a demonstration plant is being built. Two new synthesis techniques, based on super critical fluids and reverse micelles, have been developed for producing nanophase particles. Nanophase particles are used to generate extremely active coal liquefaction catalysts utilized by the Office of Fossil Energy. They hold promise for synthesis of nanometer-sized catalysts, semiconductors and non-linear optical materials. In a spin-off of research on electron-atom scattering, a laser based technique for preparing a surface layer less than two hundred nanometers in size on a substrate using atom optics was developed. A grating-like pattern can be formed that is as small as the best that can be produced by current lithography technology. A collaborative effort between industry and a national laboratory has lead to the design of two new burners which reduce emissions of oxides of nitrogen by 85% or more. Research in combustion diagnostics led to a laser-based detection system, being developed by industry, for integration with capillary electrophoresis and high performance liquid chromatography in analytical instrumentation for DNA sequencing.

The Chemical Sciences subprogram will have an important role in two initiatives: the PARTNERSHIP FOR NEW GENERATION VEHICLES (PNGV) and the ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS.

II. A. Summary Table: Chemical Sciences

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Chemical Sciences Research	$ 104,083	$ 105,821	$ 118,251	$ 12,430
Facilities Operations	54,796	53,757	63,314	9,557
Total, Chemical Sciences	$ 158,879	$ 159,578	$ 181,565	$ 21,987

II. B. Laboratory and Facility Funding Table: Chemical Sciences

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Ames Lab	$ 3,796	$ 3,539	$ 3,539	$ 0
Argonne National Lab (East)	15,978	15,561	15,561	0
Brookhaven National Lab	17,163	16,784	18,140	1,356
Idaho National Engineering Lab	306	306	306	0
Lawrence Berkeley Lab	8,676	7,435	7,761	326
Los Alamos National Laboratory	1,001	971	971	0
Oak Ridge National Lab	43,410	41,496	45,807	4,311
Pacific Northwest Lab	6,392	6,392	6,392	0
Sandia National Laboratories	7,823	7,130	7,876	746
All Other	54,334	59,964	75,212	15,248
Total, Chemical Sciences	$ 158,879	$ 159,578	$ 181,565	$ 21,987

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Chemical Sciences			
Chemical Sciences Research	Photochemistry Research - Research continued to focus on solvent dynamics, electron transfer, and short-lived phenomena. Progress in these technical areas is necessary for more efficient conversion of solar energy into other useful energy forms. Also necessary to achieve these long term goals is planned research on dye-sensitized semiconductor photoelectrodes, heterogeneous photocatalysis, and new organometallic precursors for electronic materials.	Photochemistry Research - Support for research that will enhance molecular level understanding related to solar photochemical energy conversion will be maintained. Increased emphasis will be placed upon novel semiconductor structures as well as organic semiconducting and electrically conducting polymers of import to solar photochemical energy conversion.	Photochemistry Research - The primary goal of the photochemistry program is to support basic research that will lead to improved devices for the conversion of solar radiant energy into electricity or fuels. Areas of research emphasis that contribute to this goal include the study of how natural systems, such as plants, convert solar radiant energy into high energy content materials and chemicals, and the characteristics of novel photovoltaic systems that are capable of converting radiant solar energy into electricity with reasonable efficiency. The results from this area of research are directly tied to development of sustainable technologies based on solar and renewable energy sources. The radiation sciences research program has and continues to be invaluable for understanding how and what is occurring in complex radiation environments like

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III. Chemical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chemical Sciences Research (Cont'd)			those encountered in waste tanks at Hanford and elsewhere. In general, this research has and will continue to lead to better ways to predict the health and environmental effects of ionizing radiation. Increased support for instrumentation and research at major user facilities.
	Chemical Physics - Critical to the Energy Policy Act of 1992 is an understanding, on the molecular level, of combustion processes. Funding levels permitted high priority programs in chemical dynamics and kinetics of simple reactions including the reaction dynamics of hot molecules and surface combustion chemistry to continue. The CRF continued as a major site devoted to a broad program in combustion related chemical physics. Cluster research, a new area of molecular science, continued because it had potential for improved understanding of catalysis and the behavior of materials. Interaction with the technology programs related to combustion and environmental restoration was continued.	Chemical Physics - The majority of the nation's energy arises from combustion and research related to combustion continues as a high priority program within the Chemical Sciences subprogram. Research related to chemical dynamics and kinetics of simple reactions of combustion interest will continue with high priority. Research of lower priority will be reduced in favor of combustion related work so as to maintain the strength and viability of the DOE combustion research effort. Emphasis will be placed on theoretical and experimental characterization of clusters, a unique form of matter, as a function of their composition, size, structure, and bonding.	Chemical Physics - Chemical physics research will focus on combustion and catalysis related research. Combustion processes account for about ninety percent of the energy generated today. In order to reduce the environmental effects of combustion processes they must be made more efficient, less polluting, and therefore, more sustainable. Catalysts are essential to improving the selectivity and efficiency of a whole host of processes for energy conversion and storage including the production of high energy content materials such as gasoline and other fuels. Research will focus on developing a better understanding of the chemistry of catalytic systems. Discovery of new catalysts may determine if existing processes are sustainable and enable development of sustainable methods for utilizing existing resources. Increased support for instrumentation and research at major user facilities.

III. Chemical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chemical Sciences Research (Cont'd)	Atomic Physics - The budget request was consistent with the report on "Future Research Opportunities in Atomic, Molecular, and Optical Physics" and the program provided support for efforts consonant with those areas listed. Specifically, approaches to the study of high energy density systems and energy-loss processes were emphasized. Experimental and theoretical efforts in multi-electron excitation and ionization improved understanding of the fusion process, light-matter interactions, and collision phenomena. Programs in atomic and plasma physics for advanced energy concepts related to many industrial and consumer needs were included. The plasma physics activity was coordinated with Energy Research's Fusion Energy program. An area of emphasis was on accurate characterization of chemical processes taking place in plasmas including surface phenomena and interactions between complex species found in plasmas.	Atomic Physics - Research consistent with the report "Future Research Opportunities in Atomic, Molecular, and Optical Physics" will be maintained. A new emphasis will be in the area of low-temperature plasma physics which have the potential of significant impact on materials processing.	Atomic Physics - Physics research on plasmas and energetic species associated with plasmas, including highly ionized heavy atoms, important to the advancement of fusion concepts will be emphasized. Increased support for instrumentation and research at major user facilities.
	Chemical Energy - The catalysis research included work on oxide and photoelectric catalysis, modification of shape selective oxide catalysts, and work to extend the conversion of paraffinic hydrocarbons to chemicals with significant energy efficiency, which included work with renewable feedstocks. This activity was coordinated with other more applied catalysis programs in DOE through ongoing discussions.	Chemical Energy - All program elements will continue. Synthetic and mechanistic chemistry of novel inorganic and organometallic precursors to advanced materials, which are important to new ceramics, catalysts, semiconductors and other technologically important materials, will be enhanced. In addition, nanoscale synthesis of particles (quantum dots) and surface clusters, which may lead to new photovoltaic materials and new catalysts for the control of reactions important to alternative fuels and industrial chemicals, will be undertaken.	Chemical Energy - The two main efforts under this program are the catalysis related research program and chemistry important to development of better ways to utilize carbonaceous resources such as natural gas, oil, coal and biomass. Research in catalysis is carried out on homogeneous and heterogeneous systems. As with the chemical physics program, this research seeks to better understand the effect of metals that are the basis for most catalysts that are commercially important. Increased support for instrumentation and research at major user facilities.

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III. Chemical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chemical Sciences Research (Cont'd)	Chemical Engineering - In chemical engineering sciences, research on combustion related turbulence and phase equilibria of complex mixtures, experimental and theoretical, and physically based predictive models was protected. The basic research program on advanced batteries was expanded to include research on aspects of fuel cells. This research was coordinated with other appropriate applied program elements in DOE.	Chemical Engineering - In chemical engineering sciences, research on the theoretical modeling of phase equilibria and thermophysical properties related to efficient processing will be strengthened, including modeling of turbulent flames related to reduction of environment pollutants in combustion processes. The advanced battery research program will continue at the FY 1994 level.	Chemical Engineering - Research in this area seeks to provide better and more physically realistic models for predicting the thermophysical properties and physical equilibrium of complex fluid mixtures and properties of turbulent combustion systems. The advanced battery research activity supported under this program is on batteries for non-automotive applications. It is well coordinated with the much larger and more applied effort supported by the Office of Energy Efficiency and Renewable Energy through the Advanced Battery Consortium. Increased support for instrumentation and research at major user facilities.
	Analytical Chemistry - Actinide separations research needed to underpin the development of new processes for dealing with environmental and hazardous wastes continued. Biotechnology related analytical research on macromolecules was protected.	Analytical Chemistry - The chemical properties and structure of interfaces, as determined by laser ablation, atomic force microscopy and molecular imaging of ceramic and other inorganic materials, important to the development of new and improved analytical methods and separation techniques will be emphasized.	Analytical Chemistry - This program is particularly important to processes being developed for remediation of contaminated environmental systems and waste. Emphasis in separations science will be on more efficient separations processes based on selective membranes and design of molecular systems for species-specific separations. Analytical chemistry research will focus on analytical methods that are more sensitive and species specific. The interaction between the separations science research program and DOE's Environmental Restoration and Waste Management Efficient Separations Program is one example of the importance of this program to environmental management programs. Just as improvements in many existing processes owe their development to innovations made possible by research results from this program, SUSTAINABLE DEVELOPMENT will depend in key ways on this program. Increased support for

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III. Chemical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chemical Sciences Research (Cont'd)			instrumentation and research at major user facilities.
	Heavy Element Chemistry - Emphasis was on solid state heavy element chemistry related to superconducting materials, environmental and hazardous waste related activities and lanthanide chemistry.	Heavy Element Chemistry - In the heavy element chemistry program, the study of the effect of f-electrons in superconducting materials, including the effects of magnetic fields on superconducting electrons, important to understanding superconductivity in actinide and lanthanide mixed metal oxides will be enhanced as will research on actinide chemistry in near neutral solutions since it is important to improved understanding of actinide transport under environmental conditions.	Heavy Element Chemistry - Research will focus on development of better ways to deal with radioactive materials with emphasis on understanding the chemical behavior and migration of actinide elements under environmental conditions and discovering better ways to remove them from contaminated environmental sites or radioactive wastes. Increased support for instrumentation and research at major user facilities.
	No activity.	No activity.	PARTNERSHIP FOR NEW GENERATION VEHICLES (PNGV) - A major goal of the PNGV is the design of new internal combustion engines with improved efficiencies and reduced emissions. This requires better combustion models. The main stumbling block is coupling combustion chemistry with fluid dynamics. Experimental and theoretical research in chemical physics on mechanisms and dynamics of combustion reactions coupled with research on turbulent combustion systems under chemical engineering sciences will address this need. In addition, catalysis research aimed at improving the removal of oxides of nitrogen from the exhaust of lean burn engines will be carried out under the chemical energy program.

III. Chemical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chemical Sciences Research (Cont'd)	No activity.	No activity.	ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS - Research to be carried out under the ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS will be related to technologies in the areas of avoidance or prevention, remediation and monitoring and assessment. Research in solar photoconversion will underpin development of more practical devices. The research on advanced batteries for non-automotive applications is closely related to both this effort and fuel cells related research. All contribute to technologies that would avoid production of environmentally hazardous substances. Catalysis research is broadly applicable to both avoidance and remediation technologies. It will impact energy intensive industries, particularly petroleum refining and chemical and allied products. Separations and actinide chemistry are essential to development of remediation technologies for remediation of radioactive wastes. Research in analytical chemistry has and will continue to result in novel technologies for monitoring and assessment.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.
	Funding in the amount of $2,374,000 and $79,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $3,149,000 and $157,500 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $3,631,000 and $272,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 104,083	$ 105,821	$ 118,251

III. Chemical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Facilities Operations	Support was provided to major user facilities which are available to the entire scientific community. The facilities continued to operate at the level set in FY 1993 adjusted for inflation. Improvements in safety, management, and operations at the facilities were continued. Increasing requirements in quality assurance and conduct of operations were addressed to the extent possible. (For more detail on Facilities Operations see the Major User Facilities section following the Construction section).	Support is provided to major user facilities which are available to the entire scientific community. The facilities will continue to operate at approximately the level set in FY 1994. Improvements in safety, management, and operations at the facilities will be continued. Increasing requirements in quality assurance and conduct of operations will be addressed to the extent possible. (For more detail on Facilities Operations see the Major User Facilities section following the Construction section).	Enhanced support is provided to major user facilities which are available to the entire scientific community. Improvements in safety, management, and operations at the facilities will be continued. Increasing requirements in quality assurance and conduct of operations will be addressed to the extent possible. (For more detail on Facilities Operations see the Major User Facilities section following the Construction section).
	EPACT:	EPACT:	EPACT:
	EPACT Section 2203(a)(2(a) "Supporting Research and Technical Analysis":	EPACT Section 2203(a)(2)(a) "Supporting Research and Technical Analysis":	EPACT Section 2203(a)(2)(a) "Supporting Research and Technical Analysis":
	Provided funds for operation of user facilities to provide special scientific and research capabilities to serve the research needs of the Nation's universities, industry, private laboratories, Federal laboratories, and others.	Provides funds for operation of user facilities to provide special scientific and research capabilities to serve the research needs of the Nation's universities, industry, private laboratories, Federal laboratories, and others.	Provides funds for operation of user facilities to provide special scientific and research capabilities to serve the research needs of the Nation's universities, industry, private laboratories, Federal laboratories, and others.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.
	$ 54,796	$ 53,757	$ 63,314
Chemical Sciences	$ 158,879	$ 159,578	$ 181,565

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Engineering and Geosciences

This subprogram is responsible for the support of DOE's principal strategic research activities in the engineering and geosciences disciplines at DOE laboratories and the Nation's academic institutions which support the full spectrum of DOE missions. The research contributes to the scientific underpinning for the technology pipeline leading to SUSTAINABLE DEVELOPMENT. The areas of particular concern are: pollution avoidance, control, and remediation; increased energy efficiency; and assuring future energy supplies. Research outcomes include improved manufacturing, increased reserves of domestic natural gas and oil, improved environmental remediation, lower cost of energy production and distribution, and the addition of new highly skilled personnel to the Nation's work force. These deliverables all contribute to the foundation for a sustainable economy which is wise use of resources. The subprogram emphasizes research activities by individual investigators and small interdisciplinary teams at the national laboratories and Universities. An increasing fraction of the effort in this subprogram features joint research projects involving partnerships between National Laboratories, universities and industry, making the resources of the Government more productive and more responsive to its citizens and businesses. This subprogram will have an important role in the new initiative on ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS.

Engineering research serves as a conduit between basic science and applications-oriented research and development with the goals of maintaining leadership in engineering and stimulating sustainable job growth while protecting the environment. The engineering activity aims are (1) to improve and advance our knowledge of processes underlying current engineering practice, and (2) to expand the store of fundamental concepts for solving anticipated and unforeseen engineering problems in energy technologies. Peer-reviewed topics addressed include fundamentals important to increasing energy efficiency, to identifying potential sustainable new energy production and utilization processes, to advanced manufacturing science, and to maintaining high environmental standards. Examples include multiphase flows (important to energy production and to waste management), instrumentation and control systems (important to intelligent systems for material processing and synthesis of high quality manufactured products, and for bioprocessing of fuels and energy-related wastes), and issues such as reliability and useful life prediction of aging energy production and distribution systems (important for economy, safety and environmental considerations). Recent activities emphasize increasingly the investment in human resources.

Geosciences research provides the foundation for environmentally sound, efficient, and economic use of the Earth's energy resources. It also provides the scientific basis for improved and innovative environmental remediation technologies. The Geosciences goals are to: (1) develop new data and concepts to improve our predictive understanding of natural processes which control the origin and distribution of energy-related resources, and (2) incorporate these data and concepts into a framework for anticipation of the impact of human endeavors on natural processes and the environment. Programmatic emphasis is on natural and contaminated fluids flowing in, and interacting with, porous and fractured geologic media. Underlying principles and phenomena are of broad and general applicability to: geologic disposal of radioactive and hazardous waste; geothermal energy utilization; improved recovery of oil and gas; remedial action at contaminated sites; and in situ processing of coal and oil shale resources. The theme of common processes in natural and anthropogenic phenomena, though active over quite disparate spatial and temporal scales, provides a sound foundation for the development and implementation of energy and environmental policies.

II. A. Summary Table: Engineering and Geosciences

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Engineering Research	$ 16,214	$ 16,422	$ 18,402	$ 1,980
Geosciences Research	19,323	19,423	21,551	2,128
Total, Engineering and Geosciences	$ 35,537	$ 35,845	$ 39,953	$ 4,108

II. B. Laboratory and Facility Funding Table: Engineering and Geosciences

Argonne National Lab (East)	793	570	575	5
Brookhaven National Lab	363	425	420	-5
Idaho National Engineering Lab	2,301	1,707	1,978	271
Lawrence Berkeley Lab	2,381	1,741	1,275	-466
Lawrence Livermore National Lab	1,743	1,221	850	-371
Los Alamos National Laboratory	1,990	1,300	1,025	-275
Oak Ridge National Lab	2,625	1,885	2,250	365
Pacific Northwest Lab	768	646	600	-46
Sandia National Laboratories	1,900	1,385	1,000	-385
All Other	20,673	24,965	29,980	5,015
Total, Engineering and Geosciences	$ 35,537	$ 35,845	$ 39,953	$ 4,108

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Engineering and Geosciences			
Engineering Research	Studies of aging and its mitigation in energy related structures continued, with special attention being paid to a better understanding of the effects of advanced materials processing on the eventual mechanical properties and performance of the structural components. A statistical model of sea-wave induced motion of offshore structures has been developed for use in fatigue and aging studies. Those studies include the application of advances in the theories of dynamical systems to modeling the aging of structures. The search for simplified, but realistic models of complex processes such as fluid-flow induced vibrations in heat exchangers and chemically driven pattern formation continued. Conditions for maintaining the stability and effectiveness of liquid films for rapid heat removal are under study. Support through predoctoral fellowships was provided for research on advanced manufacturing serving as an investment in human resources.	In mechanical sciences, support is maintained for peer reviewed research on advanced manufacturing technologies, providing for the maintenance of predoctoral fellowships addressing basic energy-related problems in integrated manufacturing. The first group of 12 fellows will graduate from this program. Research on multiphase flows will continue, as will work on new concepts in radiative heat transfer. Further improvements in understanding causes and evolution of damage in and subsequent failure of structures are pursued. Special attention is paid to the effects of periodic and random thermomechanical loadings on the longevity of energy related structures. Researchers are strongly encouraged to extend their contacts with industry and thereby enhance technology transfer.	In mechanical sciences, effort on understanding the formation of foams and their motion will continue. Mixtures of oil and gas will form foams. The motion of such foams in a porous medium, a typical oil and gas well environment, differs from the transport of stratified oil and gas. Efficient exploitation of a well must take those differences into account. Thirty-six three-year advanced manufacturing predoctoral fellowships will be supported. Work on the behavior of suspensions and slurries important to industrial processes and fossil energy transport will be supported. Studies of the hydrodynamics of mixing in the boundary layer will proceed. This advanced experimental and theoretical study should eventually help with understanding the pollutant dispersion in the lower atmosphere. Studies will proceed on the flow of thin liquid films in heat transfer systems.
	In the area of control systems and instrumentation, under the Advanced Materials and Processing activities, there is an increasing research effort on appropriate instrumentation, diagnostics, and relevant process control methods. Studies of propagation of solitons in fiber optics, a means for enhancing information transfer rates, are proceeding as is research on high critical temperature superconducting devices. Forty industrial firms use chemical process control software	Studies in the area of control systems and instrumentation continue with the development of diagnostics and instrumentation for sustainable advanced materials processing, and for bioprocessing of fuels and energy related wastes. Further effort is exerted in the general field of intelligent machines, and in particular use of video signals will be explored for the control and precise positioning of end effectors on robotic arms. Research on novel approaches to measuring properties of fluid mixtures	The effort in the area of control systems will include further expansion of interactions with industry aiming at transferring the basic knowledge to practical applications. Of special interest are interacting autonomous systems, and reconfigurable systems which can adapt to changing tasks and environments. The interface between biology and chemical process control will continue to strengthen, aiming at improving the practicality and economic viability of biological processes in industrial and environmental

III. Engineering and Geosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Engineering Research (Cont'd)	developed under this program, saving individual companies millions of dollars per year. Chemical process engineering research is increasingly directed toward bioprocessing problems. Topics in autonomous intelligent machines included related issues in the fundamentals of advanced manufacturing and agile manufacturing such as research on heterogeneous distributed computing systems. A novel mobile platform which combines rotation with translatory motion aroused industrial interest and received the much sought after IR100 award.	such as environmentally sound refrigerants continues.	applications, e.g., contributing to SUSTAINABLE DEVELOPMENT by the production of amino acids by fermentation, coal and oil beneficiation, and reduction of environmental damage.
	No activity.	No activity.	A new ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS initiative in engineering research will stress development of basic information used in advanced manufacturing and processing. The objective is to insure that advanced waste minimization and control technologies rest on a sound foundation. The initiative will build on the strong existing programs in mechanical sciences, control systems, and engineering analysis.
	In engineering data and analysis, research continued on transport of energy through random media, contributing among other things to improved models of cloud cover in global climate studies. Concepts from the field of aerodynamics are applied to new ways of depositing hard coatings on soft substrates. Support continued for the University-National Laboratory collaborative research on plasma processing of materials. Possible direct communication paths among members of bacterial colonies are studied together with the effect such	Peer-reviewed research topics in engineering data and analysis include characterization of mixtures of fluids important to secondary and tertiary oil recovery, novel approaches to a better understanding of turbulent flows, and extension of methods for modeling hysteresis in a wide range of engineering systems. Theories of wave propagation in nonuniform media will be applied to improving the design methods for nonimaging optical systems, such as solar collectors, area illumination systems, and various related consumer products. Non-linear methods for	Research in engineering data and analysis will continue support for the thermochemical data needed for the separation of aqueous-hydrocarbon mixtures, information that is needed for industrial processes and for environmental cleanup. Advances in the theory of non-linear systems will be used to obtain simplified, but realistic representations of complex natural phenomena such as the seemingly chaotic changes in river flow rates and water levels in lakes. Studies of enzyme activity in organic solvents and at liquid-liquid interfaces will

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III. Engineering and Geosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Engineering Research (Cont'd)	paths may have on adaptive control systems for bioprocessing. A joint University-National Laboratory project continued to characterize the rheological and transport properties of dense suspensions alongside related individual research projects. Utilization of DOE experimental and computational facilities by outside engineering researchers is strongly encouraged. Fundamental research on the response of bubbles in water to sound excitation has led to novel medical diagnostic techniques. A joint project with NASA is contributing to innovative engineering education in HBCUs.	control of chaos in manufacturing processes will be exploited.	provide basic information for the design of future bioreactors to be used in the conversion, e.g., liquefaction of coal in the Fossil Energy program.
	EPACT:	EPACT:	EPACT:
	EPACT Section 2202 "National Advanced Manufacturing Technologies Initiative":	EPACT Section 2202 "National Advanced Manufacturing Technologies Initiative:"	EPACT Section 2202 "National Advanced Manufacturing Technologies Initiative:"
	The Basic Energy Sciences program conducted research related to the goals of EPACT in the area of advanced manufacturing technologies.	The Basic Energy Sciences program conducts research related to the goals of EPACT in the area of advanced manufacturing technologies.	The Basic Energy Sciences program conducts research related to the goals of EPACT in the area of advanced manufacturing technologies.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.
	Funding in the amount of $241,000 and $8,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $322,000 and $16,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $368,000 and $27,600 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 16,214	$ 16,422	$ 18,402

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III. Engineering and Geosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Geosciences Research	Mineral-Fluid Interactions - Available funds provided for a strong continuing research program on mineral-fluid interactions. Research emphasizes the use of advanced instrumentation and capabilities for time-and space-resolved studies of mineral reactions in the presence of geologic fluids. Use of synchrotron radiation facilities at Stanford and Brookhaven are providing a base for future use of new capabilities at the 6-7 GeV Synchrotron Radiation Source. Instrumentation of a beam-line at the Advanced Photon Source is being provided via a research consortium in partnership with the National Science Foundation.	Mineral-Fluid Interactions - The appropriation provides for maintenance of an effective research program on basic rock, mineral and fluid properties. Program support of beam-line instrumentation at the 6-7 GeV Synchrotron Radiation Source will continue, as will use of synchrotron radiation facilities at Stanford and Brookhaven to study mineral-fluid reactions at the at the atomic and molecular scale. The level of effort in studies related to solar physics, solar-terrestrial interactions, and research directed toward developing and understanding of high-pressure-high temperature geologic processes will be reduced.	Mineral-Fluid Interactions - The request provides for a continued, strong research program in mineral-fluid interactions at the atomic and molecular scale. The research will emphasize integration of numerical and computational modeling of reactions with data derived from advanced chemical characterization of reacting mineral surfaces. Research effort will expand to use the 6-7 GeV Synchrotron Radiation Source in addition to synchrotron facilities at Stanford, Brookhaven, and Berkeley. Expanded effort is expected in developing ways and means to use information obtained at the atomistic scale in larger scale problems.
	Scientific Drilling - The Interagency Continental Scientific Drilling Program continued to evolve to a broader research program involving the dynamics of continental systems. The theme of the cooperative, interagency (NSF, USGS, DOE) effort is to develop approaches which better integrate geologic and geophysical studies to treat dynamics aspects of continental evolution as a whole, rather than as a collection of disparate disciplinary efforts. Research themes included effects of catastrophic events, such as meteorite impacts, on the face of the earth, potential volcanic events, and earthquakes in addition to ongoing studies bearing on energy resources.	Scientific Drilling - Drilling activities under the Continental Scientific Drilling Program will be reduced to provide support for site-characterization studies needed for future interagency scientific drilling projects. Current interagency projects which involve proposed scientific drilling at the Great Bahamas Banks, along the San Andreas fault zone, and the Chixchulub Impact crater in Mexico, and in southern California are being studied in the pre-drilling mode. The U.S. Continental Scientific Drilling Program is becoming a part of an international scientific drilling program reflecting interest and commitment expressed in international scientific conferences during 1993 and 1994.	Scientific Drilling - The request will provide for continued participation in the interagency continental scientific drilling program including a new international component led by NSF. New efforts in the U.S. program will take full advantage of core and samples obtained in previous scientific drilling efforts to garner further geophysical and geochemical information. There will be continued emphasis on broad-based studies which use scientific drilling as an essential, but not sole, tool in obtaining basic information regarding the dynamic response of the earth's continental crust anthropogenic and natural processes.

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III. Engineering and Geosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Geosciences Research (Cont'd)	Geophysical Imaging - Special emphasis was given to cross-cutting basic research which provided new knowledge on the origin, migration, and entrapment of hydrocarbons in the context of exploration and production for natural gas resources. Much of this research was carried out at universities and laboratories involving direct collaboration with industry via industry-funded consortia. Research focus was on fundamental aspects of subsurface fluid flow, including detection and characterization, and it involves modeling supported by direct field observations. Though focused on oil and gas issues, common aspects of the in situ processes can also shed light on issues related to migration of contaminated ground water.	Geophysical Imaging - The program continues to maintain a vigorous effort in geophysical imaging and analysis of fluid transport in geologic media. Seismic and electromagnetic methods or approaches form the core of the geophysical imaging program. Research which involves research support of university and DOE laboratory programs which involve participation of industry in research consortia continues as a significant part of the program. Industry participation in research will be increased under the Advanced Computational Technology Initiative of the Domestic Gas and Oil Initiative through joint DOE Laboratory-Industry research projects on geophysical identification and characterization of gas and oil reservoirs.	Geophysical Imaging - The request provides for a strong research program in using geophysical imaging techniques to determine the scale and nature of spatial heterogeneities in porous and fractured rocks of the earth's crust. The methods and techniques will stem from collaborative research in universities, DOE laboratories, and industry. They represent a core capability necessary to characterize the depths of the earth to deal with issues related to more efficient and effective use of the Nation's energy resources. An improved level of understanding of spatial heterogeneity is important in development and use of modeling of subsurface fluid transport in energy resource reservoirs.
	Environmental Geophysics - Available funds provided for a continued strong program directed toward providing basic scientific data needed for prediction of the interaction of rocks, minerals and fluids with contaminants under conditions found in the earth's shallow crust. Characterization of potential disposal sites for radioactive and chemical wastes rests heavily on non-penetrative geophysical interrogation, a theme in the research program dealing with geophysical imaging. Basic research in mineralogy and geochemistry provides knowledge on the geologic stability of engineered hosts for long-term isolation of toxic and hazardous constituents from mankind.	Environmental Geophysics - The appropriation provides for a continuing research program in geophysics which bears on non-penetrative characterization of current and potential sites for disposal of hazardous and radioactive wastes. This effort is complemented by a strong research program in geochemistry and mineralogy which provides information needed in predicting the consequences and effects of radioactive and hazardous waste disposal in the geologic environment. It is expected that some of the geophysical research will shift to improved definition of basic research needs associated with monitoring active and closed waste disposal sites.	Environmental Geophysics - The request strengthens a program emphasizing high-resolution geophysical imaging techniques for characterizing contaminated sites. The combination of electromagnetic and seismic methods in new approaches provides a foundation for simultaneous analysis of the data, with a resultant improved reliability of the interpretation. This integration will form the basis for definition of an effective monitoring technique for waste sites. Although developed with an emphasis on near-surface geologic media, it is expected that the basic approach will be readily adaptable to deep-seated problems and issues of importantance in finding hidden energy resources.

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III. Engineering and Geosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Geosciences Research (Cont'd)	Fundamental Properties - Acquisition of fundamental data on transport processes in the geologic milieu continued to be a core program component. Kinetic, thermodynamic, and transport data on reactions of minerals with natural or contaminated fluids is the base in assessing potential for release, or capture, of hazardous and toxic constituents which are presently in the geologic environment.	Fundamental Properties - Research supports acquiring fundamental data relevant to reactions in porous and fractured rocks of the earth's upper crust. Program emphasis is on low-temperature reaction of rocks and minerals with ground water, hydrocarbons, geothermal fluids, and contaminated ground water.	Fundamental Properties - The research effort emphasizes fundamental thermodynamic, kinetic, and transport data on rocks, minerals and geologic fluids which are essential in predicting behavior of natural and perturbed systems. It is expected that the program element concerned with isotope geochemistry will emphasize isotopic tracers of geochemical processes.
	SUSTAINABLE DEVELOPMENT - DOE laboratory researchers continued to take advantage of opportunities for close coupling of basic/applied research at the operating level. Interaction of university, DOE laboratory, and industry researchers is increasing and is reflected in multi-institutional research projects. Both of these themes are leading to improved transfer of ideas, data, and concepts to those involved with applied research and development.	SUSTAINABLE DEVELOPMENT - Use of basic knowledge from the research program to strengthen the Nation's economic position through rapid dissemination of knowledge is an underlying theme of the program. We continue to explore alternative methods to foster greater interaction with industry researchers and continue support of university, DOE laboratory, and industry consortia through competitive research proposals.	SUSTAINABLE DEVELOPMENT - The research program deals with both the origin and distribution of energy resources, and the disposal of associated wastes in geologic media. Thus, the research program provides information needed by policy makers in devising ways and means to satisfy current energy, economic, and environmental needs while insuring the means to provide for future needs in these areas.
	No activity.	No activity.	ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS - Geosciences research will support a new initiative in ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS emphasizing fundamental knowledge requirements needed to develop new and innovative geophysical and geochemical techniques for in situ measurement and monitoring of flow and interaction of fluids, rocks and soils. The goal is to insure that the new techniques are soundly based and provide information which can be used to predict overall system behavior. Research participants will be from industry, academia, and federal laboratories.

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III. Engineering and Geosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Geosciences Research (Cont'd)	INVESTMENT: Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $287,000 and $10,000 has been transferred to the SBIR program and the STTR program, respectively.	INVESTMENT: Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $381,000 and $19,000 has been budgeted for the SBIR program and the STTR program, respectively.	INVESTMENT: Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $434,000 and $33,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 19,323	$ 19,423	$ 21,551
Engineering and Geosciences	$ 35,537	$ 35,845	$ 39,953

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Advanced Energy Projects

The Advanced Energy Projects (AEP) subprogram provides support to establish the feasibility of novel, energy related ideas. The ideas can be stimulated in many ways, but usually arise from advances in basic research or from novel exploratory energy concepts that do not readily fit into an existing program area. The AEP subprogram spans the Department's energy mission. The high risk associated with an AEP project is properly balanced by a high payoff for the Nation's energy posture if the project is successful. The payoff will include concepts that advance Departmental research and development initiatives. Projects are typically supported at a level of $300,000 per year for a period of three years. Although funding profiles can vary among projects in the AEP subprogram, the three year budget period is considered the maximum. Following AEP support, it is expected that each concept will be sufficiently established and, if promising, will attract further funding from other sources to realize its full potential. The AEP subprogram does not support either ongoing, evolutionary research or large scale demonstration projects. Projects are selected on the basis of proposals submitted by universities, industrial organizations, non-profit research institutions or private individuals. The AEP subprogram also considers ideas or concepts submitted by researchers at national laboratories. Equal consideration is given to all submissions. The AEP subprogram will have a role in the new initiative for ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS.

II. A. Summary Table: Advanced Energy Projects

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Advanced Energy Projects	$ 10,697	$ 10,811	$ 12,026	$ 1,215
Total, Advanced Energy Projects	$ 10,697	$ 10,811	$ 12,026	$ 1,215

II. B. Laboratory and Facility Funding Table: Advanced Energy Projects

Argonne National Lab (East)	$ 1,358	$ 282	$ 300	$ 18
Lawrence Berkeley Lab	528	750	630	-120
Los Alamos National Laboratory	735	380	380	0
Oak Ridge National Lab	771	0	0	0
Lawrence Livermore National Lab	1,345	1,331	1,024	-307
National Renewable Energy Lab	725	1,362	1,150	-212
All Other	5,235	6,706	8,542	1,836
Total, Advanced Energy Projects	$ 10,697	$ 10,811	$ 12,026	$ 1,215

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Energy Projects			
Advanced Energy Projects	Provided funds to explore the feasibility of a sufficient number of new concepts that could contribute to the Nation's energy economy. Funds were also available to continue and complete existing projects as planned. These projects included the exploration of renewable polymers from plant sources of monomers, solar detoxification of aquatic systems with porous photocatalysts and ultrafast molecular electronic devices. Subprogram activities were coordinated with DOE technology development programs to identify emerging areas of mutual interest. Research was emphasized in high-leverage areas within the Department's energy mission such as new approaches for producing alternate feedstocks and fuel and novel processing techniques of advanced materials for energy conversion, energy generation, or transportation.	Provides funds to initiate seven to ten new projects. It is expected that these projects would emphasize new areas of opportunity for the Department. Areas viewed as promising include smart materials, catalytic antibodies, self-reinforcing materials, thermoelectric materials for heating and refrigeration, "clean" alternatives for cars, and alternate methods for removal of metals from coal. Existing projects in the portfolio will be continued toward completion, provided they remain promising. Subprogram activities will continue to be coordinated with the Department's technology development programs to identify areas of mutual benefit.	Provides funds to initiate about ten projects. Emphasis will be placed on concepts in new areas of opportunity for the Department, such as SUSTAINABLE ENERGY DEVELOPMENT. Candidate topical areas for support include clean energy production through unusual or untried methods, such as a heat-to-electricity conversion process, called thermophotovoltaics; energy efficient methods for refrigeration that do not use harmful chemical compounds; and methods which could lead to the development of new materials for energy use. Funds are also available to continue existing projects toward completion, provided they remain promising. Those projects include two unusual methods for cooling, magnetic and thermoelectric processes; unique energy conservation techniques; and innovative processes for energy applications.
	No activity.	No activity.	Several ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS with industry will be initiated to explore new methods that are energy-efficient and environmentally benign.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.
	Funding in the amount of $159,000 and $5,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $212,000 and $10,600 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $240,500 and $18,000 has been budgeted for the SBIR program and the STTR program, respectively.

III. Advanced Energy Projects (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Energy Projects (Cont'd)	$ 10,697	$ 10,811	$ 12,026
Advanced Energy Projects	$ 10,697	$ 10,811	$ 12,026

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Energy Biosciences

The mission of the Energy Biosciences subprogram is to provide the scientific foundation for the use of biological systems to address the Nation's energy-related goals. The biological systems studied are primarily plants and microorganisms that are intimately associated with solar energy capture and the conversion of atmospheric carbon into bulk chemicals and potential fuels. Plants and microbes also offer enormous metabolic capabilities that are potentially useful for such energy related activities as the recovery and benefaction of fossil fuels, the adaptation to dramatically affect efficient industrial processes and products, and the prevention and remediation of contaminated environments.

The programmatic mission of Energy Biosciences has three main components. One of the major objectives is to provide the fundamental research base essential to the Department's technology programs. This effort is coordinated through numerous joint planning activities and the BioEnergy Coordinating Committee. As an example of interaction in 1994, a jointly sponsored workshop was organized by Energy Biosciences and an Environmental Restoration program unit on determining the basic and applied research needs relating to the use of plants in bioremediation. Another component includes research activities that while not directly supporting current specific technology programs, offer much promise to develop radically new technologies and strategies to aid the Department in fulfilling it's mission. An example of this relates to the enhancement of carbohydrate structural research where many new insights are being gained about polysaccharides which are abundant and valuable resources. The last component is to support the infrastructure needed to carry out biological research. These activities include the development and maintenance of databases and new technologies and various essential training efforts. These activities are frequently multiagency supported. The formal and informal coordination between agencies allows each agency to support those components that are unique to each agency's mission while efficiently using resources common to all biological science research.

The program, due in large part to the nature of the scientific disciplines involved, primarily invests in individual investigators who are able to generate new and innovative scientific concepts. An annual solicitation for research applications is open to all components of the Nation's research complex. Projects are selected for support based on the scientific merit as determined by extensive peer review and the potential to positively impact energy matters. This strategy has been successful in providing a large return as many of the discoveries are readily and quickly adopted by the commercial sector.

This subprogram will have a major role in the new initiative on ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS.

II. A. Summary Table: Energy Biosciences

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Energy Biosciences	$ 25,464	$ 27,936	$ 29,534	$ 1,598
Total, Energy Biosciences	$ 25,464	$ 27,936	$ 29,534	$ 1,598

II. B. Laboratory and Facility Funding Table: Energy Biosciences

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Brookhaven National Lab	$ 1,047	$ 1,045	$ 1,050	$ 5
Lawrence Berkeley Lab	1,122	1,005	1,050	45
Los Alamos National Laboratory	131	131	131	0
National Renewable Energy Lab	135	135	135	0
All Other	23,029	25,620	27,168	1,548
Total, Energy Biosciences	$ 25,464	$ 27,936	$ 29,534	$ 1,598

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Energy Biosciences			
Energy Biosciences	The research and training activities have been maintained with few changes. A number of new research projects were initiated principally utilizing the resources obtained from terminations of prior projects. Two notable additions were the initiation of new multidisciplinary research training units in plant biochemistry and the merging of biophysical and traditional biological approaches. Preparations were also made for research in phytoremediation by holding a research needs workshop.	The current program will maintain current activities. A few new projects are to start in various topic areas including the support of projects that relate to generating essential information about how plants absorb ions and the subsequent manner in which such absorbed items are handled internally. Other basic science projects in the numerous topic areas of the Energy Biosciences program scope will be initiated that will have a bearing on technology development of energy relationship.	This period will include maintenance of activities related to energy topics. The overall objective is to further technology development in providing new means of bioproduction of fuels and chemical feedstocks, new techniques for using plants and microbes for restoring polluted sites, and building the basis for new biological systems essential for tomorrow's sustainable technologies.
	Primary Biological Production - The important efforts within the area of primary biological production consisting of photosynthesis and other research related to plant productivity were maintained. Some examples of specific topic areas included pursuing the formation of lignin and its role in plant rigidity.	Primary Biological Production - The important efforts within the area of primary biological production consisting of studying regulation of plant growth and development and other key topics will be continued. Included in this year's effort is the initiation of basic studies that relate to phytoremediation.	Primary Biological Production - The area of primary biological production consists of solar energy conversion, plant growth, and development research on how plant growth is controlled. Mutants and other technologies will be used to discern the mechanisms of growth regulation. This ultimately includes gaining knowledge about how cell wall formation is controlled, and bears on not only the structure of cell walls but also on the ultimate

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III. Energy Biosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy Biosciences (Cont'd)			structure and productivity of plants as a renewable resource.
	Primary Product Conversion - The program's activities in the metabolic diversity of microorganisms were emphasized as well as studies on the structure of plant cell walls and the synthesis of other biopolymers.	Primary Product Conversion - The program's activities will continue at approximately the FY 1994 level. A few new projects relating to plant and microbial biochemistry pathways including plant cell wall structure and biosynthesis will be initiated. Included in this year's effort is the initiation of basic studies that relate to phytoremediation.	Primary Product Conversion - The program focus will be supplemented by additional projects dealing with the biochemistry of plants, including basic information that will be of interest to and use by industry, especially those with the objective of SUSTAINABLE DEVELOPMENT.
	Biotechnology Foundation - The investigations falling within this category, such as studies on the regulation of genetic expression in plants and microbes as well as other types of investigations that help to provide the basis for new biotechnologies, were sustained.	Biotechnology Foundation - Research will continue at the FY 1994 level of effort. In addition, new projects dealing with genetic mechanisms of plant and unusual microorganisms will replace some current projects. That is, some turnovers will occur.	Biotechnology Foundation - The program focus will be supplemented by projects designed to support research in plant and microbial sciences that affects techniques and also the training of scientists for inclusion in future biotechnology development. The areas to be focused on include microbial physiology.
	Coordination - The program was able to continue to be an active participant in the activities associated with the DOE/NSF/USDA Plant Science program providing opportunities in research training and research networking. Efforts to formulate a joint activity with NSF regarding microbiological research were initiated. Joint technical workshop with another DOE office on phytoremediation was convened.	Coordination - The program plans to continue its participation in the DOE/NSF/USDA Plant Science program. Further interactions with NSF on microbial physiology are planned. The program also plans to help initiate and participate in the Interagency Plant Science Research Group to provide a broader participation in plant science research coordination.	Coordination - The program will continue to be an active participant in the DOE/NSF/USDA Plant Science program, as it will likely hold an open competition to provide opportunities in research training and related activities. The program intends to develop new activities with the NSF related to training the future generation of microbial physiologists.

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III. Energy Biosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy Biosciences (Cont'd)	Infrastructure/Training - The program was able to continue to support ongoing activities associated with the DOE/NSF/USDA Plant Science program providing opportunities in research training and research networking. Two new activities in research training were added. The program also initiated a very small activity in conjunction with NSF to foster graduate training in microbial physiology. A small post doctoral fellowship program was also continued as was support for CarbBank, a database of complex carbohydrate structures.	Infrastructure/Training - The program plans to continue the commitments presently in place relating to research training, research networking, and database maintenance. The program will also explore the possibility of establishing activities that will lead to training research professionals with the necessary interdisciplinary breadth to address such problems as phytoremediation.	Infrastructure/Training - The program plans to continue the commitments presently in place relating to research training, research networking, and database maintenance. The program will continue to be an active participant in the DOE/NSF/USDA Plant Science program, as it will likely hold an open competition to provide opportunities in research training and related activities. The program intends to develop new activities related to training the future generation of microbial physiologists (currently in great demand in all research sectors). Similarly, activities related to broadening the range of training available to young researchers interested in the plant/soil/microbe interface will likely be pursued by the program.
	No activity.	No activity.	The mission of the Energy Biosciences program is central to the objectives of the ENVIRONMENTAL TECHNOLOGY PARTNERSHIP program. Specifically, there are a number of topic areas that have not received sufficient support to generate the basic understanding requisite for the rapid and effective development of environmentally rational technologies. Among the most critical topic areas are: Broader and deeper understanding of biochemistry of plant and microbial systems that can be used to generate new environment preserving products and processes. Attainment of detailed knowledge on plant absorption and translocation of particular ions and related chemicals critical for the development of "phytoremediation" technologies. Research on plant-microbe-soil interactions likewise offers great potential in developing effective and economic

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III. Energy Biosciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy Biosciences (Cont'd)			clean-up and waste control technologies. Ascertaining the way in which plant cell walls (a major renewable resource derived from atmospheric CO2) are synthesized and degraded along with their function.
	INVESTMENT: Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $378,000 and $13,000 has been transferred to the SBIR program and the STTR program, respectively.	INVESTMENT: Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $545,000 and $27,300 has been budgeted for the SBIR program and the STTR program respectively.	INVESTMENT: Provides funding for continuation of advanced materials and processing activities included in the President's FY 1994 Economic Investment Package. Funding in the amount of $591,000 and $44,300 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 25,464	$ 27,936	$ 29,534
Energy Biosciences	$ 25,464	$ 27,936	$ 29,534

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Applied Mathematical Sciences

The Applied Mathematical Sciences (AMS) subprogram mission is to improve the ability of the Department to solve scientific and engineering problems which are critical to its mission, through research and development in and applications of advanced mathematical, computational, computer, and communications sciences and information technologies and, as authorized, to meet the requirements of the High Performance Computing Act of 1991. The Office of Scientific Computing, Office of Energy Research, manages this diverse and forefront AMS subprogram which spans the spectrum of activities from fundamental research to technology development. The AMS subprogram, through the Mathematical, Computational, and Computer Sciences Research (MCCSR) Activity, supports fundamental research, computational and computer science, and educational programs in critical areas needed by all DOE program components. The AMS subprogram, through the Advanced Computation, Communications Research, and Associated Activities (ACCRA) Activity provides leading edge information technology infrastructure to support researchers funded by the Office of Energy Research, including implementation of large scale high performance computing system prototypes for computational research, supercomputer access for over 4,000 researchers nationwide, the Energy Sciences Network (ESNet), National Information Infrastructure, and industrial technology activities.

To fulfill this mission, the AMS subprogram seeks to:

o Ensure access by energy researchers to continually improve mathematical, computational, and computer science techniques and methods through appropriate investments in basic long range applied mathematics, computational, and computer science research;

o Ensure an adequate supply of appropriately trained computational scientists and engineers to support the scientific research and Energy Policy Act requirements of the Department, and the national security, and economic competitiveness needs of the United States;

o Ensure the availability of and continuing improvements to a nationwide high performance computing, communications and information technology infrastructure which supports the requirements of energy researchers for collaboration and advanced resources;

o Ensure the availability from United States sources of high performance computing hardware and software resources and technology advances which enable the solution of critical scientific and engineering problems for the Office of Energy Research, the Department of Energy, and the Nation;

o Ensure effective industrial involvement in the Office of Energy Research, the effective transfer of knowledge and technology in high performance computing, communications, and information technologies from government-sponsored research to United States industry, and the effective diffusion of these technologies into energy related applications.

Because of this mission and the computationally intensive nature of energy related applications and problems, the Department of Energy, perhaps more than any other agency, depends for its mission accomplishment on advancements in computational techniques and computer and networking technologies. As a result, DOE has a long history of computational research and development, with strong industrial and university cooperation. The Department's Applied Mathematical Sciences subprogram was initiated in the early nineteen fifties at the suggestion of John von Neumann to enhance understanding of the use of digital computers in nuclear applications. Consequently, the Department has been prominent in maintaining the United States leadership in high performance computing and communications, in encouraging, and even providing, innovation in HPCC and other information technologies, and in supporting United States economic, scientific, and technological competitiveness and productivity through its extensive use of these technologies and their application in a national information infrastructure.

I. Applied Mathematical Sciences (Cont'd)

The unique contribution and value of the Department's AMS subprogram results from the Department's role as a pioneer in the use of supercomputers for numerical simulation of complex systems that reduce substantially the cost of experimentation and testing and that also reduce the adverse effects on the environment. Because of this experience, the Department of Energy is playing a major role in the multiagency High Performance Computing and Communications and the National Information Infrastructure Programs, both in its program initiatives and in program management. The High Performance Computing Research Centers, at Oak Ridge National Laboratory and Los Alamos National Laboratory, both operate prototype computational systems providing support to approximately eight grand challenge class computational energy projects. The National Energy Research Supercomputer Center at Lawrence Livermore National Laboratory will begin work to transition a prototype massively parallel computing system into a production environment.

Applied Mathematical Sciences will participate in the Domestic Natural Gas and Oil Initiative through the Advanced Computational Initiative. The work will be focused on fundamental research on applied mathematics of seismic phenomena, modeling of reservoir dynamics, flow of gases and liquids in heterogeneous media, and transport of contaminants.

Equally important, as noted above, this program includes research and development in advanced communications which offers to radically transform the way in which all Americans work. Accordingly, the National Research and Education Network component of the High Performance Computing and Communications Program is considered to be the prototype for a national information infrastructure which will improve our abilities to manage energy demand and will greatly assist in our efforts to reduce our dependence on energy imports through telecommuting and other means that substitute electronic communications for physical transport of people and goods.

This subprogram will have a major role in the new initiative on ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS.

II. A. Summary Table: Applied Mathematical Sciences

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Mathematical, Computational, and Computer Sciences Research	$ 49,309	$ 52,105	$ 52,114	$ 9
Advanced Computation, Communications, and Associated Activities	49,742	56,011	56,574	563
Total, Applied Mathematical Sciences	$ 99,051	$ 108,116	$ 108,688	$ 572

II. B. Laboratory and Facility Funding Table: Applied Mathematical Sciences

Ames Lab	$ 5,707	$ 4,941	$ 4,710	$ -231
Argonne National Lab (East)	7,969	7,730	7,432	-298
Lawrence Berkeley Lab	7,790	3,370	3,400	30
Lawrence Livermore National Lab	32,440	35,700	33,572	-2,128
Los Alamos National Laboratory	11,524	11,113	10,849	-264
Oak Ridge National Lab	11,460	10,443	9,630	-813
Sandia National Laboratories	4,060	3,588	3,399	-189
All Other	18,101	31,231	35,696	4,465
Total, Applied Mathematical Sciences	$ 99,051	$ 108,116	$ 108,688	$ 572

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Applied Mathematical Sciences			
Mathematical, Computational, and Computer Sciences Research	Basic Research and Human Resources (BRHR) research in analytical and numerical methods continued to pursue fundamental research in areas important for understanding the physical, chemical, and biological processes related to energy production, use, and conservation. Basic research in this area also investigated parallel numerical algorithms, geometry, and adaptive mesh techniques as part of the HPCC program. HPCC educational programs continued at current levels of effort.	Basic Research and Human Resources (BRHR) research in analytical and numerical methods will continue to pursue fundamental research in areas important for understanding the physical, chemical, and biological processes related to energy production, use, and conservation. Basic research in this area will also investigate parallel numerical algorithms, geometry, and adaptive mesh techniques as part of the HPCC program. HPCC educational programs will continue with increased emphasis on programs for women and minorities.	Basic Research and Human Resources (BRHR) research in analytical and numerical methods will continue to pursue fundamental research in areas important for understanding the physical, chemical, and biological processes related to energy production, use, and conservation. Basic research in this area will continue investigating parallel numerical algorithms, geometry, and adaptive mesh techniques as part of the HPCC program. HPCC educational programs will continue increased emphasis on programs for women and minorities and also refocus toward improving educational technologies.
	High Performance Computing Systems (HPCS) research continued at a reduced level in performance measurements of parallel architectures, parallel systems technology development, and prototype hardware evaluation of high performance computing systems, including an IBM SP2 system at Argonne National Laboratory. HPCS continued support at HPCRCs.	High Performance Computing Systems (HPCS) research will continue at a reduced level in performance measurements of parallel architectures, parallel systems technology development, and prototype hardware evaluation of high performance computing systems. HPCS will continue support for small and full scale prototype systems at HPCRCs.	High Performance Computing Systems (HPCS) research will continue at a reduced level in performance measurements of parallel architectures, parallel systems technology development, and prototype hardware evaluation of high performance computing systems. HPCS will continue support for small and full scale prototype systems at HPCRCs, and for upgrades at the HPCRCs begun in FY 1995.

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III. Applied Mathematical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Mathematical, Computational, and Computer Sciences Research (Cont'd)	Advanced Software Technology and Algorithms (ASTA) research continued in computational "grand challenges," computational techniques, and software tools and components research areas. The scope of applications research support and software components research focused on high leverage areas such as distributed environments and software tools for parallel systems. In addition, the "grand challenges" projects were reviewed and evaluated for scientific progress to focus on priority energy applications to accommodate planned growth in the other collaborations.	Advanced Software Technology and Algorithms (ASTA) research will continue in computational "grand challenges," computational techniques, and software tools and components research areas. The scope of applications research support and software components research will be focused on high leverage areas such as distributed environments and software tools for parallel systems. In addition, the "grand challenges" projects will be reviewed and evaluated for scientific progress to focus on priority energy applications to prioritize funding for these collaborations. Participation in the Domestic Natural Gas and Oil Initiative.	Advanced Software Technology and Algorithms (ASTA) research will continue in computational "grand challenges," computational techniques, and software tools and components research areas. Support for grand challenges projects will continue per the results of reviews completed in FY 1995. Support will be initiated for an interagency HPCC project to improve Input/Output/ Archival Storage for scalable distributed systems. Participation in the Domestic Natural Gas and Oil Initiative.
	EPACT:	EPACT:	EPACT:
	EPACT Section 2028 "Telecommuting Study":	EPACT Section 2028 "Telecommuting Study":	EPACT Section 2028 "Telecommuting Study":
	The two telecommuting studies initiated in FY 1993 were completed and their results published. The results will be used by DOE, and we expect other agencies, in determining future activities and research that can be undertaken in this area. ($100)	Since the two studies initiated in FY 1993 were completed in FY 1994 the studies did not require any additional funding.	Since the two studies initiated in FY 1993 were completed in FY 1994 the studies will not require any additional funding.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Funds were provided for the HPCC activities included in the President's FY 1994 Economic Investment Package.	Funds are provided for continuation of the HPCC activities included in the President's FY 1994 Economic Investment Package.	Funds are provided for continuation of the HPCC activities included in the President's FY 1994 Economic Investment Package.
	Funding in the amount of $736,000 amd $24,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $1,035,000 and $51,750 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $1,042,000 and $78,000 has been budgeted for the SBIR program and the STTR program, respectively.

III. Applied Mathematical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Mathematical, Computational, and Computer Sciences Research (Cont'd)	$ 49,309	$ 52,105	$ 52,114
Advanced Computation, Communications, and Associated Activities	Continued funding for Cray Research, Inc., C-90 supercomputer installed in FY 1992 at the National Energy Research Supercomputer Center (NERSC). Continued support for installed, full scale prototype HPCS at the HPCRCs. Continued funding for supercomputer software tools for improved access to HPCC and mass storage systems.	Continue funding for Cray Research, Inc., C-90 supercomputer installed in FY 1992 at the National Energy Research Supercomputer Center (NERSC). Continue operational support for installed, full scale prototype HPCS at the HPCRCs. Introduce massively parallel system into the Energy Research supercomputer access program. Continue funding for supercomputer software tools for improved access to HPCC and mass storage systems.	Conclude funding for Cray Research, Inc., C-90 system and ramp up project to migrate massively parallel systems into NERSC environment; i.e., the ER supercomputer access program. Continue operational support for installed, full scale prototype HPCS at the HPCRCs. Continue funding for supercomputer software tools for improved access to HPCC and mass storage systems. This budget reflects a one year shift of $2,000,000 from operating expenses to capital equipment to support the acquisition of a disk/archival mass storage system at NERSC.
	Continued T3 (45 megabit) capability upgrades for the ESNet sites. Continued gigabit network research concentrating on multi-protocol support, interprocess communications techniques, and distributed computing technologies, e.g., those which enable telecommuting. Continued funding for the FSU/SCRI cooperative agreement.	Complete T3 (45 megabit) capability upgrades for the ESNet sites. Continue gigabit network research concentrating on multi-protocol and multicast technologies, high speed interprocess communications techniques, and distributed computing technologies, e.g., those which enable information infrastructure applications. Participation in the Domestic Natural Gas and Oil Initiative. ($2,000)	Initiate data communications services within the ESNet at rates of 155 megabits per second for select requirements. Continue gigabit network research concentrating on multi-protocol and multicast technologies, high speed interprocess communications techniques, and distributed computing technologies, e.g., those which enable information infrastructure applications. Continue support for qualified, peer-reviewed projects at Florida State University Supercomputer Computations Research Institute. Initiate projects in support of the National Information Infrastructure (NII) program, especially in enabling technologies to realize NII applications in energy demand and supply management, environment or education.

III. Applied Mathematical Sciences (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Computation, Communications, and Associated Activities (Cont'd)	No activity.	No activity.	Initiate ENVIRONMENTAL TECHNOLOGY PARTNERSHIPS initiative to use DOE expertise in modeling, optimization, and information technologies to improve industrial processes and monitoring and to use distributed data technologies to support process monitoring, research and development, and communication of best practices.
	INVESTMENT:	INVESTMENT:	INVESTMENT:
	Funds were provided for the HPCC activities included in the President's FY 1994 Economic Investment Package.	Funds are provided for continuation of the HPCC activities included in the President's FY 1994 Economic Investment Package.	Funds are provided for continuation of the HPCC activities included in the President's FY 1994 Economic Investment Package.
	Funding in the amount of $739,000 and $25,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $1,104,500 and $55,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $1,131,000 and $85,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 49,742	$ 56,011	$ 56,574
Applied Mathematical Sciences	$ 99,051	$ 108,116	$ 108,688

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Program Direction

This subprogram provides the Federal staffing resources and associated funding required to develop, direct, and administer a complex and broadly diversified program for mission-oriented research and scientific user facilities for the scientific and engineering community. The Nation's future energy, defense, and technology options depend on long-range research supported by this program. This staff administers a basic research program which helps us attain our national goals, i.e., better health and quality of life, economic competitiveness, energy self-sufficiency, and national security. The staff annually monitors and evaluates approximately 1,400 individual research projects at over 200 separate institutions.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 5,821	$ 6,323	$ 6,566	$ 243
Personnel Benefits	1,144	1,407	1,440	33
Travel	640	655	650	-5
Contractual Services	1,515	1,515	1,344	-171
Total, Program Direction	$ 9,120	$ 9,900	$ 10,000	$ 100

II. B. Laboratory and Facility Funding Table: Program Direction

All Other	$ 9,120	$ 9,900	$ 10,000	$ 100
Total, Program Direction	$ 9,120	$ 9,900	$ 10,000	$ 100

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Personnel Compensation	Provided funds for personnel compensation for 76 full-time equivalents (FTEs) in the Office of Basic Energy Sciences, the Office of Scientific Computing, and for related program and management support staff in the Headquarters and field. Included, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards.	Provide funds for personnel compensation for 84 FTEs. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards.	Provide funds for personnel compensation for 85 FTEs. Provides one FTE for the Technical Leadership Development Program and includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards. Provides for pay increases resulting, for example, from normal within-grade increases, locality and/or general pay raises.
	Funded staff for the Office of Basic Energy Sciences activities which included assessing the scientific needs and priorities of the program; planning to meet those needs; technical review of proposals from laboratories and universities; and monitoring the progress of ongoing university contracts, laboratory programs, and construction projects. Provided program management to meet National research goals supporting the country's energy-related technology foundation. Supported labor-intensive awards of university grants, monitored contractor management and accountability, and provided project management oversight, especially for the 6-7 GeV Synchrotron Radiation Source. Continued interaction with other DOE organizations on the Advanced Neutron Source (ANS), supported numerous current user facilities, and ensured ES&H compliance at large research facilities and construction projects. Interacted with other agencies and helped maintain world leadership in science and technology. Supported the Basic Energy Sciences Advisory Committee and managed the DOE-wide Small Business Innovation Research and	Continue to provide program direction and oversight of efforts to meet National research goals supporting the country's energy-related technology foundation. Continue to monitor contractor oversight and accountability and project management. Continue interaction with other DOE organizations to oversee completion of certain research and development and engineering design activities related to the ANS, support current user facilities, and ensure ES&H compliance. Manage ongoing research program activities. Continue to interact with other agencies and help maintain world leadership in science and technology. Continue to support the Basic Energy Sciences Advisory Committee and manage the DOE-wide SBIR/STTR programs.	Continue to provide program direction and oversight of efforts to meet National research goals supporting the country's energy-related technology foundation. Continue to monitor contractor oversight and accountability and project management. Oversee activities leading to the conceptual design of a spallation neutron source in lieu of the ANS, support current user facilities, and ensure ES&H compliance. Manage ongoing research program activities with increased emphasis on science for sustainable development and support increased facility operations. Continue to interact with other agencies and help maintain world leadership in science and technology. Continue to support the Basic Energy Sciences Advisory Committee and manage the DOE-wide SBIR/STTR programs.

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	Small Business Technology Transfer (SBIR/STTR) programs.		
	Funded staff for the Office of Scientific Computing. Activities included policy and program planning, representation on interagency coordinating councils, management of research and development projects in mathematical and computational sciences, management of ER supercomputer centers and management of Energy Sciences Network (ESNet) development and operations. Supported the National Science and Technology Council (NSTC) high performance computing and communications (HPCC) program, requiring increased interaction among five Federal agencies with a major goal of transfer of technology to U.S. industry. Managed and coordinated the National Research and Education Network (NREN). Enhanced contractor oversight and accountability, and supported Energy Policy Act of 1992 requirements in the area of telecommuting. Supported the Administration's new program in Information Infrastructure Technology and Applications (IITA).	Continue to support all FY 1994 program areas and the interagency NSTC HPCC program. Support continued interagency computer network research and infrastructure program management and coordination of NREN. Manage proposals and research projects, including oversight of a massively parallel computing system and development of a program in IITA. Continue contractor oversight and accountability, and support Energy Policy Act of FY 1992 requirements in the area of telecommuting.	Continue to support all program areas and the interagency NSTC HPCC program. Support continued interagency computer network research and infrastructure program management and coordination of NREN. Manage proposals and research projects, including oversight of a massively parallel computing system and continued support of a program in IITA. Continue contractor oversight and accountability, and support Energy Policy Act of FY 1992 requirements in the area of telecommuting.
	Provided program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, policy coordination, information resources management, and construction management support.	Continue to provide program and management support as in FY 1994.	Continue to provide program and management support as in FY 1995.

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	Provided contract management oversight at Chicago Operations Office for construction of the 6-7 GeV Synchrotron Radiation Source. Supported all procurements, safety and environmental oversight, and project management activities related to that project, with increased emphasis on preparation for commissioning.	Provide increased technical and clerical support to the 6-7 GeV Synchrotron Radiation Source.	Continue to support the 6-7 GeV Synchrotron Radiation Source.
	$ 5,821	$ 6,323	$ 6,566
Personnel Benefits	Funded civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 1,144	$ 1,407	$ 1,440
Travel	Provided funds for official domestic, international, and local travel. Funds transferee/new hire personnel for permanent change of station transportation.	Provide funds for official domestic, international, and local travel. Funds transferee/new hire personnel for permanent change of station transportation.	Provide funds for official domestic, international, and local travel. Funds transferee/new hire personnel for permanent change of station transportation.
	$ 640	$ 655	$ 650
Contractual Services	Provided a variety of program support such as printing and editing and contractual services, including, for example, support for the SBIR/STTR programs, ES&H activities, and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.	Provide at a reduced level a variety of program support such as printing and editing and contractual services, including, for example, support for the SBIR/STTR programs, ES&H activities, and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.	Provide at a reduced level a variety of program support such as printing and editing and contractual services, including, for example, support for the SBIR/STTR programs, ES&H activities, and timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Contractual Services (Cont'd)	$ 1,515	$ 1,515	$ 1,344
Program Direction	$ 9,120	$ 9,900	$ 10,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Capital Equipment

Capital equipment is needed to support the research in each of the subprograms in the Basic Energy Sciences program. In addition, general purpose equipment at Argonne and Ames is funded through BES. Studies done both by the Department and by the laboratories continue to stress the importance of modernization in order to take advantage of more technologically advanced, efficient and safe instruments and equipment. Much of the research in the BES program involves experiments at extremes of temperatures and pressure and requires unprecedented levels of resolution. Reliable, precise measurements under such conditions challenge the current state-of-the-art, and as improvements are made in instruments and equipment, it is important to benefit from them in a timely fashion. The quality of individual research projects and effective experiments at the major facilities depends on the availability of new state-of-the-art equipment and instrumentation, and on replacement of older, obsolete equipment.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capital Equipment	$ 43,544	$ 39,056	$ 56,973	$ 17,917
Total, Capital Equipment	$ 43,544	$ 39,056	$ 56,973	$ 17,917

II. B. Laboratory and Facility Funding Table: Capital Equipment

Ames Lab	$ 1,539	$ 1,679	$ 2,408	$ 729
Argonne National Lab (East)	13,228	10,471	15,022	4,551
Brookhaven National Lab	4,126	4,030	5,580	1,550
Idaho National Engineering Lab	255	288	338	50
Lawrence Berkeley Lab	8,564	4,346	6,628	2,282
Lawrence Livermore National Lab	1,382	1,409	5,920	4,511
Los Alamos National Laboratory	1,550	1,569	2,576	1,007
Oak Ridge National Lab	5,681	5,279	5,612	333
Pacific Northwest Lab	1,054	1,037	1,066	29
Sandia National Laboratories	2,202	2,066	2,499	433
Stanford Linear Accelerator Center	1,435	1,571	2,571	1,000
All Other	2,528	5,311	6,753	1,442
Total, Capital Equipment	$ 43,544	$ 39,056	$ 56,973	$ 17,917

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
Capital Equipment	Continued core equipment funding at the FY 1993 level. Emphasis continued in areas which require ES&H attention and in areas which had high priority in the research programs. Equipment requirements at the major user facilities continued to be met. General purpose equipment requirements for Ames and ANL continued to be funded at the FY 1993 level. Acquisition of a field emission gun electron microscope, located at Lawrence Berkeley Laboratory, with a point-to-point resolution limit of about one Angstrom (TEC - $1.5M). Continued support of the High Performance Computing and Communications activities.	Continues core equipment funding at slightly below the FY 1994 level. Emphasis will continue in areas which require ES&H attention and in areas which have high priority in the research programs. Basic equipment requirements at the major user facilities will continue to be met. General purpose equipment requirements for Ames and ANL will continue to be funded at the FY 1994 level. Supports research experiments, workstations, small networking equipment, supercomputer peripheral items and associated items in conjunction with the High Performance Computing and Communications activities.	Continues core equipment funding at the FY 1995 level. Emphasis will continue in areas which require ES&H attention and in areas which have high priority in the research programs. Basic equipment requirements at the major user facilities will be enhanced in order to exploit the extraordinary capabilities made possible by these photon and neutron sources. Additional beamlines will be provided at NSLS, SSRL, ALS, HFBR and HFIR to meet the growing demand for x-rays and neutrons. Capital equipment enhancements will be provided to the Ames Materials Preparation Center, the Illinois Center for Microanalysis of Materials, the ORNL shared instrumentation program, and electron microscopy centers at LBL and LLNL. This request also includes an increase of $3,358,000 for the 6-7 GeV Synchrotron Radiation Source. General purpose equipment requirements for Ames and ANL will continue to be funded at the FY 1995 level. Continues support of the High Performance Computing and Communications activities. Additional funds are also provided for peripheral and test equipment to support the operation of NERSC. This budget reflects a one year shift of $2,000,000 from operating expenses to capital equipment to support the acquisition of a disk/archival mass storage system at NERSC.

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	INVESTMENT: Funds were provided for the HPCC activities included in the President's FY 1994 Economic Investment Package.	INVESTMENT: Funds are provided for continuation of the HPCC activities included in the President's FY 1994 Economic Investment Package.	INVESTMENT: Funds are provided for continuation of the HPCC activities included in the President's FY 1994 Economic Investment Package.
	$ 43,544	$ 39,056	$ 56,973
Capital Equipment	$ 43,544	$ 39,056	$ 56,973

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

BASIC ENERGY SCIENCES

I. Preface: Construction

Construction is needed to support the research in each of the subprograms in the Basic Energy Sciences program. Experiments necessary in support of basic research require that state-of-the-art facilities be built or existing facilities modified to meet unique research requirements. Reactors, radiation sources, and neutron sources are among the expensive, but necessary, facilities required. The budget for the BES program includes funding for the construction and modification of these facilities.

II. A. Summary Table: Construction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Construction	$ 115,942	$ 70,379	$ 24,383	$ -45,996
Total, Construction	$ 115,942	$ 70,379	$ 24,383	$ -45,996

II. B. Laboratory and Facility Funding Table: Construction

Ames Lab	$ 810	$ 450	$ 550	$ 100
Argonne National Lab (East)	107,306	60,579	8,905	-51,674
Brookhaven National Lab	3,880	2,400	6,700	4,300
Lawrence Berkeley Lab	1,806	1,800	3,675	1,875
Oak Ridge National Lab	582	0	1,200	1,200
Sandia National Laboratories	175	150	2,105	1,955
Stanford Linear Accelerator Center	737	900	730	-170
All Other	646	4,100	518	-3,582
Total, Construction	$ 115,942	$ 70,379	$ 24,383	$ -45,996

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Construction			
Construction	Provided necessary funds to continue at the approved schedule all projects underway in FY 1993. EPACT: EPACT Section 2203(a)(2)(c) "Supporting Research and Technical Analysis": Provided funds for the construction of the 6-7 GeV Synchrotron Radiation Source at the Argonne National Laboratory. ($103,814) INVESTMENT: Provided funding for advanced materials and processing activities included in the President's FY 1994 Economic Investment Package.	Provides necessary funds to continue at the approved schedule all projects underway in FY 1994. EPACT: EPACT Section 2203(a)(2)(c) "Supporting Research and Technical Analysis": Provides funds for the construction of the 6-7 GeV Synchrotron Radiation Source at the Argonne National Laboratory. ($58,379) INVESTMENT: No activity.	Provides necessary funds to continue construction of the 6-7 GeV Synchrotron Radiation Source at the approved schedule. Also provides for General Plant Projects at an increased level. The GPP funding for ANL will also support high priority ES&H activities identified in the Department's Five Year Plan. The Accelerator and Reactor Improvements and Modifications project has been increased to include upgrades of beamline instrumentation at NSLS, HFBR, HFIR, and ALS, and to provide for a new spallation target for the IPNS at ANL. Provides for continued funding to complete (in 4 years) the Combustion Research Facility, Phase II. EPACT: EPACT Section 2203(a)(2)(c) "Supporting Research and Technical Analysis": Provides funds for the construction of the 6-7 GeV Synchrotron Radiation Source at the Argonne National Laboratory. ($3,186) INVESTMENT: No activity.
	$ 115,942	$ 70,379	$ 24,383
Construction	$ 115,942	$ 70,379	$ 24,383

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

MAJOR USER FACILITIES

I. Preface: Major User Facilities

The major facilities discussed below are used to conduct forefront research in materials, chemistry, biology, medicine, and in the applied sciences using high fluxes of neutrons or photons. These facilities are unique in their ability to probe the structure and properties of important energy related phenomena. In view of the unique character of these facilities, scientists from all parts of the Nation travel to these facilities to conduct their research, including researchers from government laboratories, industry, universities, and DOE contractors. National committees and DOE committees have identified needs for advanced user facilities in order to conduct leading edge research. Funds have been included for those facilities requiring Nuclear Regulatory Commission certificates of compliance as directed by 10 CFR 170 and 171. This budget request includes funds to enhance the operations and to upgrade the major scientific facilities so their unique capabilities can be more fully exploited so that more user scientists are served and more experiments are carried out. This budget request includes construction funding in FY 1996 to complete the construction of the 6-7 GeV Synchrotron Radiation Source and operating funds to finish the testing and commissioning leading up to initial operation in FY 1997. This budget also includes construction funding in FY 1996, with project completion scheduled for FY 1999, for the Combustion Research Facility, Phase II. Summarized below is a list of each of these facilities, as well as a description of the activities underway in FY 1994 and FY 1995 to provide for their operation and maintenance. Funding for these facilities is included as part of the budget request in the Materials Sciences and Chemical Sciences subprograms.

The National Synchrotron Light Source (NSLS) at Brookhaven National Laboratory is a unique user-oriented facility for advanced research with synchrotron radiation. At NSLS a wide range of research techniques are used by chemists, solid-state physicists, metallurgists, engineers and biologists for basic and applied studies. This is a forefront, dedicated facility which is used for vacuum ultra-violet and X-ray spectroscopy and X-ray scattering. This facility now serves over 3,200 users per year.

The High Flux Beam Reactor (HFBR) at Brookhaven National Laboratory produces high flux neutron beams used for research in a variety of fields. Neutrons are used as probes by solid-state physicists, chemists, and biologists. This 29 year old research reactor has been a pacesetting facility and continues to be an important research tool. When fully utilized, this facility serves nearly 200 users per year.

The Intense Pulsed Neutron Source (IPNS) at Argonne National Laboratory is a dedicated user facility for advanced research with pulsed neutrons serving the physics, materials, chemical, and life sciences research communities. About 200 user scientists conduct experiments each year.

The High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory is a multipurpose reactor used for the production of isotopes, and also used for materials sciences, nuclear chemistry, and radiation damage research. The isotopes are important to the research, medical, and industrial community. Many of these isotopes can only be produced at the HFIR reactor. When fully utilized about 200 users are involved with research at the facility. The Radiochemical Engineering Development Center is a companion facility to the HFIR and was built to recover the transuranium elements from irradiated targets from the reactor.

The Stanford Synchrotron Radiation Laboratory (SSRL) at Stanford University is a national facility funded to permit the utilization of synchrotron radiation for basic and applied research in chemistry, physics, biology, and materials sciences. This facility became independent of the operation of the High Energy Physics electron injector for the first time in 1993 and has provided significantly improved service to the users. When fully utilized about 600 users are involved in research at the facility. With some new beamlines being commissioned, especially for structural biology, increased scientific activity is expected.

The Manuel Lujan, Jr., Neutron Scattering Center (MLNSC) (formerly LANSCE) at the Los Alamos National Laboratory was being shut down in FY 1994 because Los Alamos Meson Physics Facility operations were being terminated; therefore, no FY 1995 funding was requested for this facility.

I. Major User Facilities (Cont'd)

However, because LAMPF operations will be supported by Defense Programs in FY 1996, it has been decided that the Manuel Lujan, Jr. Neutron Scattering Center will restore partial operations in FY 1996 with the proton beams being provided to the neutron spallation source.

The Combustion Research Facility (CRF) at Sandia National Laboratories, Livermore provides a unique capability to outside users from industry, university, and laboratory scientists for combustion research. The focus of the laboratory is on laser diagnostics of combustion systems, but a variety of burner systems and special facilities are available, including those for research on coal combustion and internal combustion engines. About 30 experiments involving about 60 scientists are expected to be operational in FY 1996.

The Advanced Light Source (ALS) at Lawrence Berkeley Laboratory, previously called the 1-2 GeV Synchrotron Radiation Source, is a third generation synchrotron radiation facility for intense beams of light in the UV and soft x-ray regions of the spectrum. Research will include atomic and molecular structure, corrosion, surface phenomena, chemical dynamics, imaging of biological structures, x-ray lithography, and catalysis. Operation of the user program at the ALS began in the last quarter of FY 1993 and has demonstrated extraordinary capabilities in FY 1994.

The 6-7 GeV Synchrotron Radiation Source (also known as the Advanced Photon Source (APS)) at Argonne National Laboratory will be in its final year as a construction project. Operating funds are requested for the final stages of commissioning leading up to the initial operation of this world-class facility.

II. A. Summary Table: Major User Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
National Synchrotron Light Source	$ 23,377	$ 23,491	$ 27,818	$ 4,327
High Flux Beam Reactor	21,728	21,100	24,863	3,763
Intense Pulsed Neutron Source	6,843	6,800	11,335	4,535
High Flux Isotope Reactor	25,414	24,248	28,080	3,832
Radiochemical Engineering Development Center	7,469	7,070	7,549	479
Stanford Synchrotron Radiation Laboratory	13,329	13,427	18,398	4,971
Manuel Lujan, Jr. Neutron Scattering Center	2,052	0	6,970	6,970
Combustion Research Facility	4,171	4,171	4,592	421
Advanced Light Source	21,825	21,200	29,915	8,715
6-7 GeV Synchrotron Radiation Source	52,380	64,900	82,520	17,620
Undesignated	0	1,304	0	-1,304
Total, Major User Facilities	$ 178,588	$ 187,711	$ 242,040	$ 54,329

II. B. Laboratory and Facility Funding Table: Major User Facilities

All Other	$ 178,588	$ 187,711	$ 242,040	$ 54,329
Total, Major User Facilities	$ 178,588	$ 187,711	$ 242,040	$ 54,329

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Major User Facilities			
National Synchrotron Light Source	Continued operations with an increase to support a larger number of users. Provided upgrades in experimental systems.	Continue operations at approximately the FY 1994 level. Begin operation of small gap undulator and begin construction of elliptically polarized wiggler.	Increased funding will support enhanced operations with major instrumentation upgrades to make better use of the x-ray beams.
	$ 23,377	$ 23,491	$ 27,818
High Flux Beam Reactor	Continued operations with an increase to support a larger number of users.	Continue operations at approximately the FY 1994 level. Continue thermal hydraulic tests for 60 megawatt operation. Improve powder diffractometer and neutron reflectometer.	Increased funding will support a 60% increase in operating time and will enable many more experiments, serving many more users.
	$ 21,728	$ 21,100	$ 24,863
Intense Pulsed Neutron Source	Enhanced operations (5 additional weeks) with an increase to support a larger number of users.	Continued enhancement of operations with an increase to support a larger number of users.	Increased funding will support a 100% increase in operating time to support a much larger and growing user population.
	$ 6,843	$ 6,800	$ 11,335
High Flux Isotope Reactor	Continued operations at FY 1993 level with full attention given to ES&H upgrades.	Continues operations at approximately the FY 1994 level with full attention given to ES&H upgrades and spent fuel cask issues.	Increased funding will support a 50% increase in operating time, enabling more experiments, serving more users.
	$ 25,414	$ 24,248	$ 28,080
Radiochemical Engineering Development Center	Continued operations at approximately the FY 1994 level with full attention given to ES&H upgrades.	Continues operations at approximately the FY 1994 level with full attention given to ES&H upgrades.	Continues operations at approximately the FY 1995 level with full attention given to ES&H upgrades.
	$ 7,469	$ 7,070	$ 7,549

III. Major User Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Stanford Synchrotron Radiation Laboratory	Continued operations at FY 1993 level (approximately 6 months for users). Improvements to the SPEAR ring will be initiated.	Improvements to the SPEAR ring initiated in FY 1994 will be completed. Operation of the SPEAR ring will continue at approximately the FY 1994 level.	Increased funding will allow an increase in operating time close to 100%, providing relief to user demand. Continued improvements will be made in SPEAR as an SR source.
	$ 13,329	$ 13,427	$ 18,398
Manuel Lujan, Jr. Neutron Scattering Center	Funds provided in FY 1994 for shutdown were used to prepare the facility for potential future use, upgrade, or shutdown; e.g., inventory of assets, surveys of contaminated structures, etc. If a decision is made in the future not to operate this facility, the FY 1994 efforts would ease facility shutdown.	No activity.	Due to DOE Defense Programs support of LAMPF in FY 1996, LANSCE operations are restored.
	$ 2,052	$ 0	$ 6,970
Combustion Research Facility	Continued operations at the FY 1993 level. Strengthened programs in chemical kinetics and dynamics to accommodate more users.	Continues operations at approximately the FY 1994 level. Provides additional capability in combustion related chemical dynamics and kinetics at the CRF to accommodate more users from industrial laboratories.	Increased funding will allow operations to be enhanced to accommodate more users.
	$ 4,171	$ 4,171	$ 4,592
Advanced Light Source	Provided support for first full year of operation of the Advanced Light Source.	Continues operation of the Advanced Light Source at approximately the FY 1994 level.	Increased funding will support enhanced operation of the Advanced Light Source which will allow full utilization of existing beamlines.
	$ 21,825	$ 21,200	$ 29,915

III. Major User Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
6-7 GeV Synchrotron Radiation Source	Continued research and development, commissioning and testing of components with increases to accelerate R&D needed to support construction of the 6-7 GeV Synchrotron Radiation Source.	Continues research and development and testing of components with increases needed to begin commissioning of the storage ring.	Continues advanced commissioning of the storage ring, the insertion devices and several beamlines leading into the initial operating phase of this facility.
	$ 52,380	$ 64,900	$ 82,520
Undesignated	No activity.	Funds for Major User Facilities; this amount reduced at the appropriation level as a share of prior year balance reduction.	No activity.
	$ 0	$ 1,304	$ 0
Major User Facilities	$ 178,588	$ 187,711	$ 242,040

ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative dollars in whole dollars.)

IV. A. Construction Funded Project Summary

1.

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unappropriated Balance
GPE-400	General Plant Projects	$ -----	$ -----	$ 4,851	$ 4,500 a/	$ 6,314	$ -----
96-E-305	Accelerator and Reactor Improvements and Modifications, various locations	12,883	0	0	0	12,883	0
95-E-305	Accelerator and Reactor Improvements and Modifications, various locations	7,500	0	0	7,500 b/	0	0
94-E-305	Accelerator and Reactor Improvements and Modifications, various locations	7,277	0	7,277	0	0	0
	Subtotal, AIP	XXX	XXX	7,277	7,500	12,883	0
89-R-402	6-7 GeV Synchrotron Radiation Source, Argonne National Laboratory	467,178	301,799	103,814	58,379	3,186	0
87-R-405	Combustion Research Facility, Phase II, Sandia National Laboratory, Livermore	26,800	4,800	0	0	2,000	20,000
	Subtotal, Line Item Projects	XXX	XXX	103,814	58,379	5,186	20,000
	Subtotal, Basic Energy Sciences	XXX	XXX	115,942	70,379	24,383	20,000
	Adjustment for use of prior year balances	XXX	XXX	0	- 3,800	0	0
	Total, Basic Energy Sciences	$ XXX	$ XXX	$ 115,942	$ 66,579	$ 24,383	$ 20,000

a/ Does not exclude general reduction for use of prior year balances of $1,000,000.

b/ Does not exclude general reduction for use of prior year balances of $2,800,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPE-400 General Plant Projects — TEC: $ 6,314
Various Locations — TPC: $ 6,314

Start Date: 2nd Qtr. FY 1996 — Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Obligations	Costs FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Prior Year Projects	XXXXX	5,443	3,081	0	0	0
1994 Projects	4,851	851	1,259	2,342	399	0
1995 Projects	3,500	0	700	1,400	1,400	0
1996 Projects	6,314	0	0	1,262	2,526	2,526

3. Narrative: This project is required to provide for minor new construction, other capital alterations and additions, and for buildings and utility systems. Where applicable, the request also includes the cost of installed capital equipment integral to a subproject. Funding of this type is essential for maintaining the productivity and usefulness of Department-owned facilities. Since it is difficult to detail this type of project in advance, a continuing evaluation of requirements and priorities may be expected to result in additions, deletions, and changes in the currently planned subprojects. The FY 1996 GPP funding for Argonne National Laboratory will also support high priority ES&H activities identified in the Department's Five Year Plan.

The currently estimated distribution of FY 1996 funds by office is as follows:

Ames Laboratory	$ 550
Argonne National Laboratory	5,369
Notre Dame Radiation Laboratory	25
Sandia National Laboratories	105
Stanford Linear Accelerator Center (SSRL)	265
Total project cost	$ 6,314

FY 1996 General Plant Projects (GPP) are miscellaneous minor new construction projects of a general nature. The total estimated costs of each will not exceed $2,000,000. Funding of this type is essential for maintaining the productivity and usefulness of Department-owned facilities and in meeting its requirement for safe and reliable facilities operation.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995 a/	FY 1996 Request
Construction	$XXXXX	$ 4,851	$ 4,500	$ 6,314

a/ Does not exclude general reduction for use of prior year balances of $1,000,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-E-305 Accelerator and Reactor Improvements and Modifications, Various Locations — TEC: $12,883 TPC: $12,883

Start Date: 3rd Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Obligations	Costs
1996	$12,883	$12,883	$ 2,575
1997	0	0	5,154
1998	0	0	5,154

3. Narrative: This project provides for additions and modifications to accelerator and reactor facilities, which are supported by the Basic Energy Sciences program. Since program priorities and needs change, the projects described below indicate the most likely projects to be funded. A continuing evaluation, however, is necessary to ensure that those projects with the greatest productivity are funded. Two projects at the Brookhaven National Laboratory are requested to incorporate improvements at the High Flux Beam Reactor and the National Synchrotron Light Source, one project is requested for facility improvements at the Stanford Synchrotron Radiation Laboratory, one project is requested at the Oak Ridge National Laboratory for improvements to the High Flux Isotope Reactor, one project at Lawrence Berkeley Laboratory is requested for improvements at the Advanced Light Source, one project is requested at Argonne National Laboratory for improvements to the Intense Pulsed Neutron Source, and one project is requested for improvements at the Kansas State University, Ion Collision Physics Facility.

The following are the projected items of work to be performed at the various locations. Since needs and priorities may change, other projects may be substituted for the examples listed below, and some of these may be located on non-Government owned property.

National Synchrotron Light Source
Consistent with the increased user requirements at the NSLS, several additions and improvements are proposed at the facility including: installation of a beamline, installation of a Spherical Grating Monochromater, and water system improvements, and major upgrades for several beamlines to replace 10-year old capabilities.

High Flux Beam Reactor
Several reactor additions and improvements are necessary to ensure the continued safe and reliable operation of this facility. Specifically in FY 1996, several projects are proposed including: Safety System Instrumentation Upgrade, Confinement Atmosphere Sampling, Reactor Vessel Periscope Replacement, and H-8 Spectrometer Improvements, and upgrades for several beamlines to enable users to collect more data.

Stanford Synchrotron Radiation Laboratory
Provides for improvements to the Stanford Synchrotron Radiation Laboratory necessary to meet changing research activities underway. The capabilities at this laboratory are an essential part of several BES research efforts, and to meet these unique requirements, modifications and improvements are necessary. During the FY 1993-FY 1995 period, a SPEAR orbit stabilization program will have improved the overall performance of the storage ring. In FY 1996 it is proposed that the ring be modified such that electron injection can be accomplished at the ring operating energy of 3 GeV.

High Flux Isotope Reactor
Provides for necessary safety improvements identified for the High Flux Isotope Reactor (HFIR) facilities and systems, to assure compliance with DOE orders and applicable standards, codes and regulations. This project will also provide for some upgrading of beamline instrumentation.

Advanced Light Source
This accelerator and reactor improvement and modification project would provide for the development of an innovative insertion device in the Light Source storage ring lattice in order to extend the generation of high-flux, high-brightness x-rays to photon energies up to at least 30 keV. This project will also provide for the beamline instrumentation to utilize the insertion device.

Kansas State University, Ion Collision Physics Facility
This project will provide a closed loop liquid nitrogen system to replace the batch filled system now in use. The liquid nitrogen compressor-refrigerator system will allow the production of liquid nitrogen for cooling of the J.R. Macdonald Laboratory superconducting LINAC and other peripheral systems. This project will also provide a new control switchyard for a more efficient operation to allow for higher yields, improved duty cycle, and quick beam identification.

Intense Pulsed Neutron Source
This project will provide for a new spallation target to increase the neutron flux available to users.

Total Project Funding (BA):

	FY 1996 Request
Construction	$12,883

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 89-R-402 6-7 GeV Synchrotron Radiation Source
Argonne National Laboratory
Argonne, Illinois

TEC: $467,178
TPC: $811,922

Start Date: 3rd Qtr. FY 1990 Completion Date: 1st Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriated	Adjustments	Obligations	Costs
1989	$ 6,000	$ 0	$ 6,000	$ 5,633
1990	40,000	- 560 a/	39,440	15,916
1991	70,000	- 408 b/	69,592	37,347
1992	90,360	0	90,360	88,044
1993	110,407	-14,000 c/	96,407	117,504
1994	107,000	- 3,186 d/	103,814	100,104
1995	58,379	0	58,379	88,143
1996	3,186	0	3,186	14,487

a/ Reflects sequestration of funds for FY 1990.
b/ Application of a portion of the FY 1991 general reduction of $4,111,000.
c/ Application of a portion of the FY 1993 programmatic general reduction of $49,000,000.
d/ Reflects rescission of funds for FY 1994.

3. Narrative: Argonne National Laboratory is constructing a new-generation 6-7 GeV synchrotron radiation source. This facility is important for the Department's research program and will serve as a national resource for the conduct of research by industry, government, and university scientists. This facility will produce unprecedentedly brilliant x-ray beams to serve the research needs of virtually all scientific disciplines and many technological fields, e.g., physics, chemistry, materials and surface science, biology, and medicine. Users will include scientists, engineers, and graduate students from universities, industry, and research laboratories throughout the United States.

The facility as currently envisaged will consist of a large storage ring containing as many as 34 insertion devices to give intense beams of hard x-rays. The injection and booster systems will be designed to inject positrons into the storage ring at the design energy of 7 GeV. Beam currents as high as 100 milliamperes and lifetimes of at least 10 hours are anticipated. Most importantly, the lowest possible beam emittance will be sought to give the highest brilliance x-ray source by a factor of 10,000 over any in existence. This facility will impact heavily on the fields of physics, materials, chemistry, biology and medicine, and many technologies. Determination of bulk and surface structure will be performed with greater resolution and accuracy. Microprobe characterization will allow impurity detection in the parts per billion range. The high brilliance will make possible inelastic x-ray scattering which is an essentially unexplored field. Investigating time-dependent phenomena in biological membranes and in photosynthetic processes will be possible, as will observing the motion of atoms in protein systems. Angiography and analysis of tumor diseases will be advanced through non-invasive and very fast x-ray diagnostics without, or with the minimal use of, dyes or drugs. Topography will be extended to time-resolved studies of plastic deformation and fracture. All of these investigations are made possible by the photon energy, time-structure, intensity, and unusual brilliance of the radiation source. Other experiments important to national security needs would also be undertaken.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction	$301,799	$103,814	$58,379	$ 3,186	$ 0
Capital Equipment	15,800	5,642	3,900	7,258	0
Operating Expenses	105,022	52,380	64,900	82,520	7,322

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 87-R-405 Combustion Research Facility, Phase II
Sandia National Laboratories
Livermore, California

TEC: $ 26,800
TPC: $ 30,020

Start Date: 4th Qtr. FY 1988 Completion Date: 4th Qtr. FY 1999

2. Financial Schedule (Federal funds):

Fiscal Year	Appropriated	Obligations	Costs
Prior Years	$ 4,800	$ 4,800	$ 4,205
1995	0	0	450
1996	2,000	2,000	1,700
1997	9,000	9,000	9,400
1998	7,000	7,000	6,800
1999	4,000	4,000	4,245

3. Narrative: Sandia National Laboratories, Livermore (SNL/L) is constructing an addition of approximately 32,300 square feet to the existing 51,100 square-foot multibuilding CRF facility (Project No. 78-13-B, TEC $9.4 million) at SNL/L. Phase II will add 21,200 square feet to the existing 16,400 square-foot laboratory building and 11,100 square feet to the existing 25,000 square-foot office building. This project will add vitally needed capacity and important new capabilities to the Combustion research resources that can adequately deal with the critical needs of the 1990s. During the past 10 years, the number of scientists who visit CFR to participate in research has almost tripled, completely saturating CRF, Phase I facilities. To accomplish this goal requires the addition of a new laboratory wing that emphasizes centralized next-generation laser diagnostic facilities and specially designed laboratories not available in CRF Phase I.

The project has been delayed due to severe budget constraints during FY 1989 through FY 1995. The appropriations totaling $4.8 million in FY 1987 and FY 1988 were used for site preparation and design and construction of the shell of the laboratory building addition. The appropriations in FY 1996-FY 1999 will complete the balance of the project.

The overall scope of this project is the doubling of space available for experiments. Equipment funds are required for a new central laser system and special purpose laboratory equipment. A modest enlargement of the office building is included to house the rapidly increasing population of visiting scientists. These enhancements will consolidate the combustion-related resources at a single site readily accessible to visiting scientists.

4. Total Project Funding (BA):

	Prior Years	FY 1996 Request	To Complete
Construction	$4,800	$ 2,000	$20,000
Capital Equipment	0	0	2,000
Operating Expenses	220	0	1,000

OVERVIEW

ADVANCED NEUTRON SOURCE (ANS)

The Advanced Neutron Source was planned to be an experimental facility designed to meet the Nation's need for an intense steady-state source of neutrons. The facility was to be based on a new research reactor that would have had the most intense neutron beams in the world, exceeding its closest competitor by a factor of 5 to 10. The Advanced Neutron Source would have replaced both the High Flux Beam Reactor and the High Flux Isotope Reactor, and would have provided increased research capability and increased assurance of worker and public safety.

The Advanced Neutron Source was designed to meet the programmatic needs of the Department of Energy in condensed matter physics, chemistry, biological sciences, materials science, polymer science, isotope production, and materials irradiation. In addition, it would have functioned as a national facility open to researchers from universities, national laboratories, and industry. Based on the experience in Europe, the Advanced Neutron Source would have served over 1,000 researchers per year.

Because of the high cost of ANS and increasing budget constraints, no FY 1996 funds are provided for ANS. The Department plans to propose to reprogram funds remaining in FY 1995 for conceptual design of a spallation neutron source in the Basic Energy Sciences program.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative in whole dollars).

LEAD TABLE

Advanced Neutron Source

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses	$16,243	$20,000	-$236	$19,764	$0
Capital Equipment	0	1,000	0	1,000	0
Subtotal, Program	$16,243	$21,000	-$236	$20,764	$0
Adjustment	-307 a/	-127 a/	0	-127 a/	0
Total, Program	$15,936 b/	$20,873	-$236	$20,637	$0
Summary					
Operating Expenses	15,936	19,873	-236	19,637	0
Capital Equipment	0	1,000	0	1,000	0
Total, Program	$15,936	$20,873	-$236	$20,637	$0

Staffing (FTE's) (Included in Basic Energy Sciences Program Direction)

Authorization: Section 209, P.L. 95-91, "Department of Energy Organization Act"

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.
b/ Excludes $243,000 which has been transferred to the SBIR program and $8,100 which has been transferred to the STTR program.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Advanced Neutron Source

FY 1995 Appropriation	$ 21,000
- Adjustment	- 236
FY 1995 Adjusted	$ 20,764
Operating Expenses	- 19,764
No activity.	
Capital Equipment	- 1,000
No activity.	
FY 1996 Congressional Budget Request	$ 0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ADVANCED NEUTRON SOURCE RESEARCH, DEVELOPMENT AND OPERATIONS

I. Preface: Advanced Neutron Source Research, Development and Operations

Because of the high cost of ANS and increasing budget constraints, no FY 1996 funds are provided for ANS.

II. A. Summary Table: Advanced Neutron Source Research, Development and Operations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Advanced Neutron Source Research, Development and Operations	$ 16,243	$ 19,764	$ 0	$ -19,764
Total, Advanced Neutron Source Research, Development and Operations	$ 16,243	$ 19,764	$ 0	$ -19,764

II. B. Laboratory and Facility Funding Table: Advanced Neutron Source Research, Development and Operations

Oak Ridge National Lab	$ 15,536	$ 19,000	$ 0	$ -19,000
Argonne National Lab (East)	200	0	0	0
Brookhaven National Lab	175	0	0	0
All Other	332	764	0	-764
Total, Advanced Neutron Source Research, Development and Operations	$ 16,243	$ 19,764	$ 0	$ -19,764

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Neutron Source Research, Development and Operations	The FY 1994 research and development (R&D) program was a continuation of designs, tests, and modelling of ANS components to provide further results prior to ANS construction. Activities in FY 1994 included fuel element R&D such as the irradiation of the second miniplate in the reflector region of the High flux Isotope Reactor facility. Upper and lower fuel elements without uranium in fuel plates were fabricated for use in core flow tests. Dynamic tests of some reactor core elements, the control rods, and the reflector shutdown rods were carried out. A study was undertaken to examine the impact on the ANS performance goals if low or medium-enriched fuel is used rather than the highly enriched fuel used for the design. The study will build on existing information using currently developed fuels and focus on low (20%) and medium (35%) enriched fuel. Continued work on the Environmental Impact Statement.	Because of the high cost of ANS and increasing budget constraints, no FY 1996 funds are provided for ANS. The Department plans to propose to reprogram funds remaining in FY 1995 for conceptual design of a spallation neutron source in the Basic Energy Sciences program.	The Administration proposes not to continue the Advanced Neutron Source (ANS) reactor project in FY 1996. Although the Department of Energy will complete certain research and development and engineering design activities described in the FY 1995 Energy and Water Development Appropriations Act conference report, no additional financial commitments will be made on behalf of the project after the submission of the FY 1996 budget request to Congress. Concern about the high cost of building the ANS reactor was the primary factor in the Administration's decision to propose terminating the project. There was also a non-proliferation policy concern about the 93-percent enriched fuel that the ANS reactor was designed to use. The development of a technically acceptable lower enriched fuel would have required further research and development. The Administration will propose to reprogram remaining funds from the FY 1995 appropriation for the ANS project to support research and development and engineering design activities leading to the conceptual design of a spallation neutron source to meet the Nation's need for a next-generation neutron scattering source. An additional $8 million for this purpose is also requested in FY 1996 in the Basic Energy Sciences program. The preferred alternative site for a spallation neutron source would be Oak Ridge National Laboratory, in order to maximize the use of neutron source design expertise already developed through the preparation of the ANS conceptual design, and to take advantage of the laboratory's

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III. Advanced Neutron Source Research, Development and Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Neutron Source Research, Development and Operations (Cont'd)			experience in operating particle accelerators and conducting neutron scattering research. The spallation source research and development effort will make use of the best capabilities in the DOE laboratories, including the Defense Programs' Accelerator Production of Tritium (APT) project at Los Alamos National Laboratory. Without a major new neutron source or upgraded operation of an existing research reactor, the United States will forego significant scientific, technical, and economic benefits that derive from neutron scattering and materials irradiation research and the production of medical isotopes. A spallation neutron source should enable the Nation to carry out major research activities in areas such as biology, materials science, superconductivity, pharmaceuticals, electronic materials, and many other technological areas that are critical for future U.S. economic competitiveness and national security.
	EPACT: EPACT Section 2203(a)(2)(d) "Supporting Research and Technical Analysis": Provided funds to further develop the design and provide the technical foundation for the Advanced Neutron Source. Funding in the amount of $243,000 and $8,100 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $392,750 and $19,637 has been budgeted for the SBIR program and the STTR program, respectively.	

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III. Advanced Neutron Source Research, Development and Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Advanced Neutron Source Research, Development and Operations (Cont'd)	$ 16,243	$ 19,764	$ 0
Advanced Neutron Source Research, Development and Operations	$ 16,243	$ 19,764	$ 0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CAPITAL EQUIPMENT

I. Preface: Capital Equipment

Because of the high cost of ANS and increasing budget constraints, no FY 1996 funds are provided for ANS.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capital Equipment	$ 0	$ 1,000	$ 0	$ -1,000
Total, Capital Equipment	$ 0	$ 1,000	$ 0	$ -1,000

II. B. Laboratory and Facility Funding Table: Capital Equipment

Oak Ridge National Lab	$ 0	$ 1,000	$ 0	$ -1,000
Total, Capital Equipment	$ 0	$ 1,000	$ 0	$ -1,000

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	No activity.	Because of the high cost of ANS and increasing budget constraints, no FY 1996 funds are provided for ANS. The Department plans to propose to reprogram funds remaining in FY 1995 for conceptual design of a spallation neutron source in the Basic Energy Sciences program.	No activity.
	$ 0	$ 1,000	$ 0
Capital Equipment	$ 0	$ 1,000	$ 0

OVERVIEW

ENERGY RESEARCH ANALYSES

The Office of Program Analysis (OPA) manages the Energy Research Analyses (ERA) Program to fulfill one of the major responsibilities of the Director of the Office of Energy Research. The Department of Energy Organization Act (Public Law 95-91) states "...It shall be the duty and responsibility of the Director [of the Office of Energy Research] (1) to advise the Secretary with respect to the physical research program...[and] (2) to monitor the Department's energy research and development programs in order to advise the Secretary with respect to any undesirable duplication or gaps in such programs...." Accordingly, the Office of Program Analysis arranges for and participates in the assessments of research projects and programs in order to evaluate the quality and impact of these efforts and to identify undesirable duplications and gaps.

There are two principal types of independent research assessments performed by OPA on programs throughout the Department. First, OPA staff organize comprehensive project by project evaluations of major research programs using outside experts from industry, academia and laboratories. These peer reviews of ongoing projects provide the basis for judgments on the quality of the research and its impact. Without these reviews less technically competitive projects might be continued. Second, technical assessments provide independent views of the directions that future R&D in specific areas of interest across the Department should take to be more productive and relevant to DOE missions. Research assessments are performed by outside experts and OPA staff drawing on the world's leading experts in the specific fields being addressed. State-of-the-science assessments by the Foreign Applied Sciences Assessment Center (FASAC), Japanese Technology Evaluation Center (JTEC) and JASON's are also performed.

The Office of Program Analysis project-by-project peer reviews of research in progress across the Department support the Department's core values dealing with excellence and quality. The reviews help program managers improve or replace projects that have significant shortcomings, and capitalize on the strengths of stronger projects.

The performance measure for the ERA program is the number of project reviews or assessments performed. One research needs assessment and approximately 300 project reviews can be performed at the requested level.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative in whole dollars.)

LEAD TABLE

Energy Research Analyses

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses	$3,649	$3,531	-$124	$3,407	$3,463
Subtotal, Program	3,649	3,531	-124	3,407	3,463
Adjustment	-142 a/	-101 a/	0	-101 a/	0
Total, Program	$3,507 b/	$3,430	-$124	$3,306	$3,463
Summary					
Operating Expenses	$3,507	$3,430	-$124	$3,306	$3,463
Total Program	$3,507	$3,430	-$124	$3,306	$3,463

Authorization: Section 209, P.L. 95-91.

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

b/ Excludes $55,000 which has been transferred to the SBIR program and $1,820 which has been transferred to the STTR program.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Energy Research Analyses

FY 1995 Appropriation	$ 3,531
- Adjustment	- 124
FY 1995 Adjusted	$ 3,407
- Increase support for peer reviews	+ 56
FY 1996 Congressional Budget Request	$ 3,463

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENERGY RESEARCH ANALYSES

I. Preface: Energy Research Analyses

The Energy Research Analyses (ERA) program assesses research projects and programs in order to judge the significance of these efforts and to identify undesirable duplications and gaps. Peer reviews of individual research projects using outside experts are performed. Technical assessments to determine the direction of future research and state-of-the-science reviews are also performed.

II. A. Summary Table: Energy Research Analyses

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Energy Research Analyses	$ 3,649	$ 3,407	$ 3,463	$ 56
Total, Energy Research Analyses	$ 3,649	$ 3,407	$ 3,463	$ 56

II. B. Laboratory and Facility Funding Table: Energy Research Analyses

Oak Ridge National Lab	$ 741	$ 344	$ 600	$ 256
Argonne National Lab (East)	997	300	400	100
All Other	1,911	2,763	2,463	-300
Total, Energy Research Analyses	$ 3,649	$ 3,407	$ 3,463	$ 56

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Energy Research Analyses			
Energy Research Analyses	Continued to perform peer reviews of hundreds of projects in ER, FE and EE. Performed one technical assessment of research needs in FE, CE, or ER (e.g., catalysis). Supported external R&D review through groups outside OPA, e.g., JASON, FASAC, JTEC. Provided DOE's share of support for management and technical staff for NAPAP acid precipitation assessments.	Continue to perform peer reviews of hundreds of projects in ER, FE and EE. Perform one technical assessment of research needs in FE, CE, or ER (e.g., nanostructured materials). Support external R&D review through groups outside OPA, e.g., JASON, FASAC, JTEC. Provide DOE's share of support for management and technical staff for NAPAP acid precipitation assessments.	Continue to perform peer reviews of approximately 300 projects in ER, FE and EE. Perform one technical assessment of research needs in FE, CE, or ER (e.g., advanced composite materials). Support external R&D review through groups outside OPA, e.g., JASON, FASAC, JTEC.
	Funding in the amount of $55,000 and $1,820 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $66,000 and $3,306 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $69,260 and $5,195 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 3,649	$ 3,407	$ 3,463
Energy Research Analyses	$ 3,649	$ 3,407	$ 3,463

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

OVERVIEW

UNIVERSITY AND SCIENCE EDUCATION

GOALS AND OBJECTIVES

There is a national consensus that one of the most serious problems facing the Nation over the next several years is the declining number of Americans, including women and underrepresented, who are either pursuing careers in or have a functional knowledge of science, mathematics, engineering, and technology. This crisis in education has serious implications for the Nation's continued international, economic and technological competitiveness. The Goals 2000: Educate America Act calls for United States students to be first in the world in mathematics and science achievement, every adult American literate and possessing the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship and that the Nation's teaching force able to access programs for continued improvement of their skills and knowledge to prepare all American students for the next century.

Sustained progress towards the National Education goals is also essential if the Department of Energy is to have the scientific and technical workforce available to accomplish the Department's missions related to energy, the environment, national security and economic competitiveness. The Department historically has been both a user and a patron of a large portion of the scientific and technical workforce.

STRATEGIES

The Office of University and Science Education is the lead organization for coordinating and overseeing the Department's critical role in providing leadership to the national effort to improve mathematics, science, engineering, and technology education for all students at all levels. The FY 1996 budget request for the Office of University and Science Education program will provide continued support for a continuum of precollege through post graduate science, engineering, and mathematics education programs. These programs have two complementary strategic goals. The first goal is to encourage and support students pursuing scientific and technical degrees in fields of direct interest and relevance to the Department of Energy. This goal is achieved through a range of student research and education programs primarily conducted at the Department's national laboratories. The second goal is to assist in the national effort to improve and strengthen public literacy in science and technology. This goal is carried out through the support of

programs involving teachers, students, and adults in both formal and informal learning experiences. Special emphasis will be accorded in FY 1996 and the out years on supporting technical education activities and on leveraging long-term, systemic change through information technology and partnerships and continuous program improvement through evaluation and assessment.

PROGRAM RESPONSIVENESS

The Office of University and Science Education program consists of three major subprograms and a set of interrelated program activities which focus on the following objectives which primarily, but not exclusively, utilize the scientific and technical resources of the Department's national laboratories:

- o Promote high quality science education programs throughout the Department;
- o Increase participation of underrepresented populations in science, mathematics, engineering, and technology;
- o Contribute to systemic efforts focused on an increase in the knowledge and ability of teachers and students in science, mathematics and technology; and
- o Strengthen the capability of post-secondary faculty and students to perform long-range scientific and technology research, development and application in partnership with industry; universities and colleges, and governmental agencies.

The first Office of University and Science Education subprogram, Laboratory Cooperative Science Centers, includes support for precollege student and teacher research and training; and for the undergraduate, graduate and faculty research appointments at Department of Energy laboratories and Department of Energy business and university consortia. The FY 1996 request builds on and extends the strong base of Department involvement in science education on all levels. By FY 1996, the Department's education programs and efforts will fully reflect the change of the Department's mission with major emphasis on collaboration for economic competitiveness, alignment with the National Education Goals and the National Science and Technology Council priorities and partnerships for systemic change with Federal agencies, business and community groups to accomplish the goals of major initiatives such as technical education for school to work transition, use of educational technology as part of the information infrastructure creation and national community service. Support will be provided for national programs and systemic efforts conducted through regional partnerships with the Department Laboratories. This includes 1) summer, academic year and work study research and technical appointments for undergraduate science, engineering, and technical educators and students; 2) pre-college systemic efforts and scientific literacy. Support is requested to initiate and improve programs to meet new Administration, Department, National Education and National Science and Technology council goals and initiatives, to significantly increase participation by women and underrepresented and for dissemination of high quality programs and educational resources.

The second Office of University and Science Education subprogram, University Programs, includes support for community college, college and university-based efforts directed at encouraging more participants, including underrepresented populations and women, to pursue scientific, technical, and engineering careers needed for the economic future of the Nation. Continued cost-shared support will also be provided for the development of museum exhibitions and related classroom educational materials on Department of Energy-related scientific and technical program activities. Support is requested to continue the Department's Prefreshman Enrichment Program for 7,000 middle-school students in summer workshops on mathematics, science, and engineering conducted by universities on their campuses. Funds are requested to continue nationally competitive postdoctoral research appointments in energy-related scientific and technical disciplines and for enhanced support of Department of Energy laboratory/minority university collaborative research and education partnerships. Support is requested to fund implementation plans to improve research infrastructure in Experimental Program to Stimulate Competitive Research states. This subprogram incudes: workforce analysis and assessment for the Department's education efforts done by the Department alone or in conjunction with its partners; support for post-secondary level systemic alliances to increase the number of underrepresented participants served in high quality instructional settings for contemporary and future workforce needs.

The third Office of University and Science Education subprogram, University Research Instrumentation, will provide competitive support for the acquisition of state-of-the-art research instrumentation by Department of Energy-sponsored university researchers. The University Research Instrumentation program assists the Department's energy research and technology programs by helping universities purchase instruments which cost more than $100,000 each, and which will be utilized by a number of faculty researchers and students. University Research Instrumentation awards are made to universities based on both the merit and accomplishments of current Department of Energy-sponsored university research projects and degree to which the new equipment will enable university scientists to substantially advance understanding of energy-related phenomena.

Program Direction funding is requested for Federal staffing and associated support costs to provide overall management of the Science Education and Technical Information Program, as well as program direction and management of the Office of University and Science Education program.

Performance measures used for the Office of University and Science Education program include the number of students and educators served (including underrepresented populations) and the short- and long-term impacts of the educational efforts on the participants. These measurements will be applied to each of the subprograms.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

University and Science Education

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
University and Science Education					
Operating Expenses					
Laboratory Cooperative Science Centers	$34,158	$35,846	$ -5,531	$30,315	$30,035
University Programs	16,912	17,377	+9,705	27,082	17,377
University Reactor Fuel Assistance	3,563	3,730	-146	3,584	0 b/
University Research Instrumentation	640	5,647	0	5,647	5,647
Program Direction	0	2,944	0	2,944	2,359
SUBTOTAL PROGRAM	$55,273	$65,544	$ 4,028	$69,572	$55,418
Adjustment	- 1,199 a/	- 730 a/	0	- 730 a/	0
TOTAL PROGRAM	$54,074	$64,814	$ 4,028	$68,842	$55,418
Staffing (FTEs)	0	25	0	25	25

Authorization: P. L. 95-91, "Department of Energy Organization Act" (1977), Section 209

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total reduction is applied at the appropriation level.
b/ Activity transferred to the Office of Nuclear Energy.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

SUMMARY OF CHANGES

University and Science Education

FY 1995 Appropriation	$60,544
- Adjustment: Center for Minorities in Science and Engineering	+ 5,000
FY 1995 Adjusted	65,544
- Transfer	+ 4,028
FY 1995 Comparable	$69,572
- Center for Minorities in Science and Engineering - One Year Program	- 5,000
- Reduced support for laboratory cooperative science center	- 280
- Reduced support for EPSCOR Program	- 4,559
- Reduced program direction support based on streamlining	- 585
- University Reactor Fuel Assistance Activity Transferred to the Office of Nuclear Energy	- 3,730
FY 1996 Congressional Budget Request	$55,418

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

UNIVERSITY AND SCIENCE EDUCATION

I. Preface: Laboratory Cooperative Science Centers

Support is provided for precollege science students and teachers and for university faculty, graduate, and undergraduate students to participate in summer and semester-length research and education activities at Department of Energy laboratories. The objectives of this effort are to provide hands on research experience in cutthg edge science thereby stimulating students to prepare for careers in science and technology fields and enhancing the knowledge and skills of teachers and faculty. The principal approach of this program takes full advantage of the unique resources and facilities at the Department of Energy laboratories for research and support of related mathematics and science education. Support is also provided in this activity element for high school science student honors research, science teacher research appointments, long-term laboratory rural/urban school partnerships workshops/institutes and other precollege science and mathematics education activities

II. A. Summary Table: Laboratory Cooperative Science Centers

Program Activity	FY 1994	FY 1995	FY 1996	$ Change
Laboratory Cooperative Science Centers	$34,158	$30,315	$30,035	$ - 280
Total, Laboratory Cooperative Science Centers	$34,158	$30,315	$30,035	$ - 280

B. Major Laboratory and Facility Funding

AMES LAB	$ 296	$ 427	$ 400	$ -27
ARGONNE NATIONAL LAB (EAST)	4,575	4,242	4,292	0
BROOKHAVEN NATIONAL LAB	2,057	2,092	2,092	0
FERMI NATIONAL ACCELERATOR LAB	1,200	1,211	1,211	0
IDAHO NATIONAL ENGINEERING LAB	157	174	174	0
LAWRENCE BERKELEY LAB	1,629	1,800	1,800	0
LAWRENCE LIVERMORE NATIONAL LAB	704	1,000	1,000	0
LOS ALAMOS NATIONAL LABORATORY	1,087	1,000	858	-142
MOUND PLANT	187	100	100	0

Program Activity	FY 1994	FY 1995	FY 1996	$ Change
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION	2,503	2,500	2,500	0
OAK RIDGE NATIONAL LAB	1,098	1,150	1,150	0
PACIFIC NORTHWEST LAB	1,300	1,200	1,200	0
PRINCETON PLASMA PHYSICS LAB	371	284	289	0
SAVANNAH RIVER ECOLOGY LAB	111	100	100	0
SAVANNAH RIVER TECHNOLOGY CENTER	43	70	70	0
SANDIA NATIONAL LABORATORIES	650	650	650	0
TOTAL MAJOR LABORATORY AND FACILITY FUNDING	$17,968	$17,055	$16,886	0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction Science Education Program Direction			
Federal and Contractual Support			
Office of the Director and Office of University and Science Education	Funding by Object Class: Personnel Compensation $ 0 Benefits 0 Travel 0 Contractual Services 0 $ 0	$ 1,624 276 155 1,734 $3,789	$ 1,250 228 135 746 $ 2,359
		Management and Direction of the Office of Science Education and Technical Information, and Management and Administration of the University and Science Education Programs.	Continues Management and Direction of the Office of Science Education and Technical Information, and Management and Administration of the University and Science Education Programs.
	$ 0	25 FTE $ 3,789	25 FTE $ 2,359

Program Activity	FY 1994	FY 1995	FY 1996
Laboratory Cooperative Science Centers	Provides for precollege and university-level student/teacher/faculty research appointments and related science education activities at Department of Energy labs. Includes summer and semester length research appointments for undergraduate students, with special emphasis on underrepresented minorities including women; and summer/academic year research appointments. Provides for consistency on the application of overhead rates to research support.	Provides for precollege and university-level student/teacher/faculty research appointments and related science education activities at Department of Energy labs. Includes summer and semester length research appointments for undergraduate students, with special emphasis on underrepresented minorities including women; and summer/academic year research appointments. Provides for consistency on the application of overhead rates to research support.	Provides for precollege, technical and university-level student/teacher/faculty research appointments and related science education programs at Department of Energy labs in support of the National Education Goals. Support is maintained for programs which focus on the Department's business lines and meet the Department's goals for quality, diversity, systemic reform, student, educator and public science education, educational technology and technical training.
	Maintains support for national precollege-level student/teacher research appointments and related science education activities at Department of Energy labs at the FY 1993 level. Includes high school science student honors research, precollege teacher research appointments, and minority student research apprenticeships.	Maintains support for national precollege-level student/teacher research appointments and related science education activities at Department of Energy labs at the FY 1994 level. Includes high school science student honors research, precollege teacher research appointments, and minority student research apprenticeships.	Program budget priorities are for systemic efforts, workforce development, science literacy, evaluation and dissemination.
	Maintains support of precollege science education for the Lawrence Livermore Supercomputer Center.	Maintains support of precollege science education for the Lawrence Livermore Supercomputer Center.	Systemic efforts include those initiatives which support partnerships focused on reforming science and math education within a state or regional system or an institution thereby maximizing

Program Activity	FY 1994	FY 1995	FY 1996
Laboratory Cooperative Science Centers (Cont'd)			the impact of the investment. The rural/urban systemic partnerships and various teacher development programs are examples of the Department's systemic education programs.
	Continues support for Department of Energy laboratory rural/urban partnerships designed to strengthen precollege math/science education on local/regional basis.	Continues support for Department of Energy laboratory rural/urban partnerships designed to strengthen precollege math/science education on local/regional basis.	Workforce Development supports student programs designed to meet the future scientific and technical workforce requirements of the Department. Includes major commitment to increasing underrepresented populations in science and technology. Programs in this priority area provide the training and development of faculty and students from high schools, community colleges and universities through comprehensive programs which include research and training experiences at the labs. Includes support for such activities as high school honors research, community college research apprenticeships, undergraduate summer and semester research and graduate and postgraduate support.
	Provides support for 10 four-week teacher training institutes (50 teachers per institute) for middle/high school science/math teachers	Provides support for 10 four-week teacher training institutes (50 teachers per institute) for middle/high school science/math teachers	Scientific Literacy is the program priority area which forms the foundation for citizen understanding of contemporary science issues and

Program Activity	FY 1994	FY 1995	FY 1996
Laboratory Cooperative Science Centers (Cont'd)	at Department of Energy laboratories.	at Department of Energy laboratories.	contributes to their ability to make informed decisions regarding science in their lives. Program offerings in this priority area cover the broad spectrum of methods to present science in an attractive and informative manner to a wide range of audiences including precollege student programs, public media presentations, museum exhibits and programs on energy related science, conferences and national competitions.
	No activity.	Initiates support for technology education, including initiatives in school-to-work transitions and apprenticeship programs.	Evaluation ensures the highest quality and most effective science and technical programs to meet customer requirements. Program quality in science content and instruction must model to the public the commitment to quality intrinsic to the Department scientific and technical work. Evaluation for continuous improvement and to measure impact is essential to ensure the Department's goals are met in a quality manner. Program evaluation templates have been developed for student and teacher programs at the precollege level. A template for systemic programs is under development. Evaluation has also provided a service and tools which the Department has shared with five

Program Activity	FY 1994	FY 1995	FY 1996
Laboratory Cooperative Science Centers (Cont'd)	Funding in the amount of $500 has been budgeted for the SBIR program.	Funding in the amount of $500 has been budgeted for the SBIR program	other Federal agencies for the evaluation of their science education programs. College level evaluation will provide information on the best methods to attach and retain under-represented populations in science, math, and technical fields. Dissemination as a budget priority allows for the replication of high quality science and technology education programs through electronic media or technical assistance. This approach maximizes the Department's ability to extend its resources beyond the physical setting of the labs. Programs using Department communications technology, high performance computing and other laboratory core competencies are a unique resource to the Department to be shared with the nation.
	$ 34,158	$ 30,315	$ 30,035
Laboratory Cooperative Science Centers	$ 34,158	$ 30,315	$ 30,035

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
University Programs	Continues postdoctoral fellowship program which will support ten postdoctoral research appointments in energy related scientific and technical disciplines at Department of Energy laboratories. The fellowship program will be nationally competitive.	Continues postdoctoral fellowship program which will support postdoctoral research appointments in energy related scientific and technical disciplines at Department of Energy laboratories. The fellowship program will be nationally competitive.	Continues postdoctoral fellowship program which will support postdoctoral research appointments in energy related scientific and technical disciplines at Department of Energy laboratories. The fellowship program will be nationally competitive.
	Supports manpower analysis efforts. Support includes funding for the collection and analysis of data on the supply and demand of scientists and engineers for current and future energy research and development programs.	Supports manpower analysis efforts. Support includes funding for the collection and analysis of data on the supply and demand of scientists and engineers for current and future energy research and development programs.	Supports manpower analysis efforts. Support includes funding for the collection and analysis of data on the supply and demand of scientists and engineers for current and future energy research and development programs.
	Reduces support for PREP below FY 1993 level.	Increases support for PREP.	Continues support for PREP at FY 1995 level.
	Provides continued funding for museum-based science education program at FY 1993 level.	Provides continued funding for museum-based science education program at FY 1994 level.	Provides continued funding for museum-based science education program at FY 1995 level.
	Continues support for Department of Energy laboratory/minority university alliances which include precollege science education activities with emphasis on underrepresented minorities at FY 1993 level.	Continues support for Department of Energy laboratory/minority university alliances which include precollege science education activities with emphasis on underrepresented populations.	Continues support for Department of Energy laboratory/minority university alliances which include precollege science education activities with emphasis on underrepresented populations.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

UNIVERSITY AND SCIENCE EDUCATION

I. Preface. University Programs

Support is provided for science education and research-related efforts in areas of direct relevance to Department of Energy where universities, colleges, and other non-Department of Energy facilities are the principal performers. Support is included for: scientific and technical manpower development efforts; the collection and analysis of data on the supply and demand of scientists and engineers for current and future energy research and development programs; and summer institutes in science/math on college campuses for women and minority middle school students. Support is also provided for the development and preparation of museum-based exhibits and related educational material on energy-related science technology. Funds are requested to support a number of competitive postdoctoral research appointments in energy-related scientific and technical disciplines and for Department of Energy laboratory/minority university collaborative research and education programs.

II. A. Summary Table: University Programs

Program Activity	FY 1994	FY 1995	FY 1996	$ Change
University Programs	$16,912	$27,082	$17,377	$ -9,705
Total, University Programs	$16,912	$27,082	$17,377	-9,705

II. B. Major Laboratory and Facility Funding

LAWRENCE BERKELEY LAB	$ 833	$ 800	$ 800	0
LOS ALAMOS NATIONAL LABORATORY	291	350	350	0
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION	3,001	3,000	3,000	0
OAK RIDGE NATIONAL LAB	291	350	350	0
SANDIA NATIONAL LABORATORIES	1,516	1,500	1,500	0
Total, Major Laboratory and Facility Funding	$ 5,932	$ 6,000	$ 6,000	0

Program Activity	FY 1994	FY 1995	FY 1996
University Programs (Cont'd)	Provides support for 10 pilot grants to retain women/minority students in math/science pipeline who are prepared to teach at precollege level.	Maintains support for grants to retain women/minority students in math/science pipeline who are prepared to teach at precollege level.	No activity.
		Establish a center for minorities in science, engineering, and technology at Southern University and A&M College System. ($5,000)	
	EPACT:	EPACT:	EPACT:
	EPACT Section 2203(b) "Supporting Research and Technical Analysis":	EPACT Section 2203(b) "Supporting Research and Technical Analysis":	EPACT Section 2203(b) "Supporting Research and Technical Analysis":
	Maintains the number of implementation grants awarded and supports traineeships.	Reduces number of implementation grants.	Supports one to two grants.
	Funding in the amount of $200 has been budgeted for the SBIR program.	Funding in the amount of $300 has been budgeted for the SBIR program.	Funding in the amount of $300 has been budgeted for the SBIR program.
	$ 16,912	$ 27,082	$ 17,377
University Programs	$ 16,912	$ 27,082	$ 17,377

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

UNIVERSITY AND SCIENCE EDUCATION

I. Preface. University Reactor Fuel Assistance

Activity transferred to the Office of Nuclear Energy.

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
University Reactor Fuel Assistance	Provides support for university reactor refueling and funding for low enriched uranium conversion, including initial fabrication of one TRIGA reactor core. Funding in the amount of $56 has been budgeted for the SBIR program.	Provides support for university reactor refueling and funding for low enriched uranium conversion, including fabrication of one TRIGA reactor core. Funding in the amount of $75 has been budgeted for the SBIR program	Activity transferred to the Office of Nuclear Energy.
	$ 3,563	$ 3,584	
University Reactor Fuel Assistance	$ 3,563	$ 3,584	

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

UNIVERSITY AND SCIENCE EDUCATION

I. Preface: University Research Instrumentation

Support is provided on a competitive merit basis to universities for the purchase of state-of-the-art scientific research equipment costing more than $100,000. The principal objective of the program is to strengthen the ability of university scientists to conduct long-range research related to the high priority Department of Energy fundamental science and energy technology research. An ancillary objective of the University Research Instrumentation program is to provide graduate students with hands-on experience in the use of sophisticated research instrumentation.

II. A. Summary Table: University Research Instrumentation

Program Activity	FY 1994	FY 1995	FY 1996	$ Change
University Research Instrumentation	$ 640	$ 5,647	$ 5,647	$ 0
Total, University University Research Instrumentation	$ 640	$ 5,647	$ 5,647	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
University Research Instrumentation	Provides support for 20-22 instrumentation awards	Provides support for 22-24 instrumentation awards. Funding in the amount of $100 has been budgeted for the SBIR program.	Provides support for 22-24 instrumentation awards. Funding in the amount of $100 has been budgeted for the SBIR program.
	$ 640	$ 5,647	$ 5,647
University Research Instrumentation	$ 640	$ 5,647	$ 5,647

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ER LABORATORY TECHNOLOGY TRANSFER

The Energy Research Laboratory Technology Transfer Program (ER-LTT) focuses on opportunities at the Energy Research (ER) laboratories for increased collaborations with industry to link the ER science program and laboratories to technology applications, projects, and partnerships. ER-LTT projects rely upon "market pull" wherein the further development and application objective is defined by U.S. industry, rather than the Department. The program supports cost-shared collaborations where industry and the Department leverage their resources on a research and development project, reducing the risk to a point where industry will pursue the improved product or process development. The ER-LTT funds collaborations that build upon and are consistent with the technologies and missions resident in the ER laboratories, in the following six focus areas: advanced materials; advanced computing; advanced manufacturing; electronics and instrumentation; biotechnology and health; and energy and environment. The collaboration projects at each laboratory are focused in three of these critical technology areas where the laboratory's core competencies are strongest. The program's vision is to make the National laboratories user friendly sources of research and development collaboration with industry.

The program is designed to more effectively transfer technology from ER laboratories by supporting industry-driven, cost-shared Cooperative Research and Development Agreements (CRADAs). The program provides support for the industry collaboration office at each of the ER laboratories to develop and implement small quick response projects, particularly with small and minority businesses, for large multi-year CRADAs, and for major government-industry partnerships. The major partnerships will typically involve other agencies and cross major Departmental programs. They are jointly planned and managed by the industry and laboratory partners.

The FY 1996 budget request proposes to fund the industry collaboration offices, multi-year CRADAs, and one ongoing major partnership (American Textiles Consortium [AMTEX], continue support of the Advanced Computational Technology Initiative [ACTI]), and initiate support for one new major partnership (the PARTNERSHIP For A NEW GENERATION Of VEHICLES [PNGV]).

The performance measures used for the ER Laboratory Technology Transfer program include: (1) the number of small businesses helped by the industrial collaboration centers; (2) the number of industry-driven collaborations; (3) the share of project costs funded by industry; and (4) the results developed through CRADAs.

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

ER Laboratory Technology Transfer

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
Laboratory Technology Transfer	$36,456	$56,513	-$613	$55,900	$58,776
Technology Utilization	955	1,000	0	1,000	0 c/
Subtotal Program	$37,411	$57,513	-$613	$56,900	$58,776
Adjustment	-717 a/	-318 a/	----	-318 a/	----
TOTAL PROGRAM	$36,694	$57,195	-$613	$56,582	$58,776
Summary					
Operating Expenses	$36,694	$57,195	-$613	$56,582	$58,776
TOTAL PROGRAM	$36,694 b/	$57,195	-$613	$56,582	$58,776

Staffing (FTEs) (Reference Advisory and Oversight Program Direction)

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977), Section 209

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

b/ Excludes $559,000 which has been transferred to the SBIR program and $19,000 which has been transferred to the STTR program.

c/ Technology Utilization is no longer a subprogram of the ER Laboratory Technology Program. It is now the Technology Partnerships program in the Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness. See separate budget for this new program.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

SUMMARY OF CHANGES

ER Laboratory Technology Transfer

FY 1995 Appropriation	$ 57,513
- Adjustment	- 613
FY 1995 Adjusted	$ 56,900
- Technology Utilization, previously a subprogram of the ER Laboratory Technology Transfer program, is now Technology Partnerships, a new separate program in the Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness	- 1,000
- Decrease funding for CRADA project support	- 3,624
- Decrease funding for AMTEX partnership	- 3,500
- Initiate support for PARTNERSHIP FOR NEW GENERATION VEHICLES (PNGV)	+10,000
FY 1996 Congressional Budget Request	$ 58,776

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ER LABORATORY TECHNOLOGY TRANSFER

I. Preface: ER Laboratory Technology Transfer

This subprogram fulfills the legislative mandate in the Energy Policy Act of 1992 to more effectively transfer research and technology and supports the policies and guidelines of the Office of Science and Technology Policy. The program supports industry-driven, cost-shared research and development projects that focus on the results of the Energy Research science programs at the laboratories that are of interest to the private sector. The industry collaboration projects at each ER laboratory are focused in technology areas where the laboratory's core competencies are strongest. In addition to quick response projects, personnel exchanges and technical assistance that supports small business particularly, the program supports major industry-driven partnerships with entire industry sectors that involve other agencies and cross major Departmental programs (e.g., AMTEX, ACTI and PNGV).

II. A. Summary Table: ER Laboratory Technology Transfer

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ER Laboratory Technology Transfer	$ 36,456	$ 55,900	$ 58,776	$ 2,876
Total, ER Laboratory Technology Transfer	$ 36,456	$ 55,900	$ 58,776	$ 2,876

II. B. Laboratory and Facility Funding Table: ER Laboratory Technology Transfer

Ames Lab	$ 365	$ 665	$ 700	$ 35
Argonne National Lab (East)	4,993	8,381	10,800	2,419
Brookhaven National Lab	3,373	7,920	10,800	2,880
Continuous Electron Beam Accelerator Facility	200	450	200	-250
Fermi National Accelerator Lab	200	450	400	-50
Idaho National Engineering Lab	430	745	325	-420
Lawrence Berkeley Lab	4,424	8,626	10,800	2,174
Oak Ridge National Lab	4,958	9,664	10,800	1,136
Pacific Northwest Lab	16,031	7,712	10,800	3,088
Princeton Plasma Physics Lab	335	585	450	-135
Stanford Linear Accelerator Center	247	540	200	-340
All Other	840	10,162	2,501	-7,661
Total, ER Laboratory Technology Transfer	$ 36,456	$ 55,900	$ 58,776	$ 2,876

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III Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
ER Laboratory Technology Transfer			
ER Laboratory Technology Transfer	No Activity.	No activity	Initiate support of the PARTNERSHIPS for NEW GENERATION VEHICLES (PNGV) with industry driven CRADAs at ER laboratories in areas such as manufacturing improvements and lightweight materials.
	Increased support for industry collaboration offices at the 5 ER multi-program and 5 ER single purpose laboratories. Provided funding to support initiation of new personnel exchanges, new technology maturation projects, technical assistance/ consultation and new small, quick response CRADAs, particularly with small business.	Increases support for industry collaboration offices at the 5 multi-program and 5 single purpose laboratories. Provides funding to support initiation of new personnel exchanges, new technology maturation projects, technical assistance/ consultation and new small, quick response CRADAs, particularly with small business.	Support industry collaboration program offices at 5 multi-program laboratories and 5 single purpose laboratories. Initiate new quick response collaborations with small businesses and support personnel exchanges and technical assistance.
	Supported 48 new multi-year CRADA project starts. Continued support of 33 ongoing CRADA projects.	Supports 58 new CRADA project starts. Continues support of 62 ongoing CRADA projects.	Continue support of 102 ongoing CRADAs. No new starts.
	Supported AMTEX partnership.	Increase support for AMTEX partnership.	Decrease support for AMTEX partnership.
	No activity.	Initiates support of the Advanced Computational Technology Initiative (ACTI)	Continued support for the Advanced Computational Technology Initiative (ACTI).
	Continued support for program management and the development and performance of technology transfer evaluation activities.	Continues support for program management and the development and performance of technology transfer evaluation activities.	Continues support for program management and the development and performance of technology transfer evaluation activities.
	Funding in the amount of $545,000 and $18,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $1,107,000 and $55,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $1,176,000 and $88,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 36,456	$ 55,900	$ 58,776

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III. ER Laboratory Technology Transfer (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ER Laboratory Technology Transfer	$ 36,456	$ 55,900	$ 58,776

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ER LABORATORY TECHNOLOGY TRANSFER

I. Preface: Technology Utilization

The Technology Utilization subprogram is responsible for activities associated with the coordination, implementation and evaluation of the DOE's enhanced technology transfer program. As a voice for technology commercialization stakeholders, this subprogram serves as an advocate for technology transfer both internal and external to the Department. Activities include:

- Providing analytical and other support to the activities of the Technology Transfer Committee (TTC) made up of representatives from other parts of the department. The TTC is expected to further inter-program coordination through formation of a number of ad hoc and standing subcommittees and working groups. In addition to supporting the TTC, the Technology Utilization subprogram will also provide analytical and other support to the activities of a number of ad hoc task forces and working groups associated with Departmental technology transfer, commercialization and utilization activities.

- Providing analytical and other support as part of DOE contribution to activities with other Federal agencies, state and local governments, trade associations, universities, the Federal Laboratory Consortium and other relevant groups outside of DOE on technology transfer, commercialization and utilization activities.

- Developing, in coordination with Program Secretarial Officers, a Department-wide technology transfer education and training program, outreach activities and a performance measurement and reporting system.

- Performance of cross-cutting technology and utilization studies and pilot activities.

II. A. Summary Table: Technology Utilization

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Technology Utilization	$ 955	$ 1,000	$ 0	$ -1,000
Total, Technology Utilization	$ 955	$ 1,000	$ 0	$ -1,000

II. B. Laboratory and Facility Funding Table: Technology Utilization

Argonne National Lab (East)	$ 25	$ 95	$ 0	$ -95
Brookhaven National Lab	2	0	0	0
Lawrence Berkeley Lab	0	0	0	0
Oak Ridge Institute for Science & Education	330	100	0	-100
Pacific Northwest Lab	0	0	0	0
Sandia National Laboratories	0	0	0	0

II. B. Laboratory and Facility Funding Table: Technology Utilization

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	598	805	0	-805
Total, Technology Utilization	$ 955	$ 1,000	$ 0	$ -1,000

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Technology Utilization			
Technology Utilization	Continued to develop tailored model CRADAs and umbrella CRADAs for specific, identified, industry groups.	Continue to refine model CRADA language and develop master CRADAs for specific, identified, industry groups.	All Technology Utilization functions were transferred to the new Technology Partnerships program in the Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness. See separate budget request for this new program.
	Identified and performed analyses in support of the development of recommended policy solutions to potential and real barriers to technology transfer.	Identify and perform analyses in support of the development of recommended policy solutions to potential and real barriers to technology transfer with targeted groups.	
	Collected data, performed data validation and analysis, prepared and issued after approval of the Secretary the FY 1993 Annual Report to Congress on Technology Transfer Activities, Accomplishments and Plans.	Collect data, perform data validation and analysis, prepare and issue after approval of the Secretary the FY 1994 Annual Report to Congress on Technology Transfer Activities, Accomplishments and Plans.	
	Continued to provide analytical and other support to several ongoing task force efforts, such as the machine tool industry working group, the intellectual property counsel staffing study and the ad hoc Classification Committee.	Continue to provide analytical and other support to several ongoing task force efforts, such as the machine tool industry working group, the intellectual property counsel staffing study and the ad hoc Classification Committee.	

III. Technology Utilization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Utilization (Cont'd)	Continued to provide analytical and other support to several interagency technology transfer efforts. Continued to provide analytical, logistical and other support to developing program linkages with other agencies on technology transfer. Developed, delivered and evaluated two specialized, advanced, Department-wide technology transfer courses for DOE and M&O contractor staff involved with technology transfer. EPACT: EPACT Section 2203(c) "Supporting Research and Technical Analysis" and Section 3001(e) "Research Development, Demonstration, and Commercial Application Activities": Collected data, reviewed inputs, established the content and published Technology '93-'94. Collected data, reviewed inputs, established the content and published the R&D 100 Award brochure. Funding in the amount of $14,000 and $1,000 has been transferred to the SBIR program and the STTR program, respectively.	Continue to provide analytical and other support to several interagency technology transfer efforts. Continue to provide analytical, logistical and other support to developing program linkages with other agencies on technology transfer. Continue the development, delivery, and evaluation of new, Department-wide specialized technology transfer courses for DOE and M&O contractor staff involved with technology transfer. EPACT: EPACT Section 2203(c) "Supporting Research and Technical Analysis" and Section 3001(e) "Research Development, Demonstration, and Commercial Application Activities": Collect data, review inputs, establish the content and publish Technology '94-'95. Collect data, review inputs, establish the content and publish the R&D 100 Award brochure. Funding in the amount of $20,000 and $1,000 has been budgeted for the SBIR program and the STTR program, respectively.	
	$ 955	$ 1,000	$ 0
Technology Utilization	$ 955	$ 1,000	$ 0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ADVISORY AND OVERSIGHT PROGRAM DIRECTION

This program provides the staffing resources and associated funding required to carry out the traditional Office of Energy Research (ER) responsibilities under the Department of Energy Organization Act (P.L. 95-91) and as mandated by the Secretary in areas beyond the scope of the other assigned Energy Research programs. These activities include the statutory responsibilities for providing advice and analyses to the Secretary on science and technology policy issues, science and technology strategic planning, the overall health and well-being of the Department's energy laboratories, and other initiatives established by the Secretary. It also supports the Office of Environment, Safety and Health (ES&H) Technical Support and related program and management support staff. Staff performing those responsibilities related to management of science education activities, which were transferred from the Office of Energy Research in the 1993 departmental realignment, are transferred in FY 1995 to the University and Science Education program; and staff supporting crosscutting technology utilization policy and outreach activities of the newly established Deputy Under Secretary for Technology Partnerships and Economic Competitiveness are transferred in FY 1996 to the Technology Partnerships program.

This staff supports those activities remaining in ER upon finalization of the Department's most recent organizational realignment, including providing the Secretary with scientific and technical advice on DOE research and development projects, programs, plans and policies. Staff develop ER strategic plans; conduct independent technical assessments, peer reviews, and evaluations of specific programs and projects; represent ER on intra-agency working groups; provide interagency coordination on science and technology developments; and assess the overall strength and vitality of the multiprogram laboratory system. Staff develop and coordinate departmental laboratory management policy and oversee management processes such as strategic and institutional planning for multiprogram laboratories, laboratory appraisals, work by the laboratories for non-DOE sponsors, laboratory-directed research and development and spinoff technology transfer projects at the ER laboratories. This program also supports those activities related to infrastructure resource management including: support for environment, safety and health; general purpose facilities; general plant projects; and general purpose equipment in support of some landlord responsibilities. Staff comprising ER's Office of ES&H Technical Support are also budgeted under Advisory and Oversight Program Direction. These staff provide technical support to the Director of ER on all ES&H matters and also support the various ER programs in the implementation of their line management responsibilities regarding ES&H in their program and facility planning and operations. The remaining functions of the Office of Space, which was abolished in the 1993 realignment, were dispersed throughout the Department during FY 1994.

During FY 1994, this program supported those activities which transferred from ER to the newly established Office of Science Education and Technical Information, which oversees and coordinates the Department's activities related to strengthening science, mathematics and engineering education in the U.S. and manages university and precollege science education and manpower development programs. These resources have been incorporated into the University and Science Education program for FY 1995.

During FY 1994 and FY 1995, this program supported those activities which form the basis for the newly established Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness. The staff develops policy and advises the Department on technology transfer and utilization issues which cut across program lines; manages the Department's enhanced technology transfer program; performs crosscutting technology utilization and transfer studies and pilot activities, and provides tools and training programs and conducts outreach activities for the Department's technology transfer efforts. The staff develops and implements performance measurements for the Department's technology transfer activities. These resources are transferred in FY 1996 to the Technology Partnerships program.

Performance indicators are: quality and support of overall departmental plans; improvements in R&D programs engendered by assessments and reviews; efficiencies in ES&H procedures and improvements in pollution prevention and compliance programs; improvement in environmental decisionmaking by ER and DOE; and improving stewardship of the environment at ER sites.

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Advisory and Oversight Program Direction

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Energy Oversight, Research					
Analysis and University Support					
Advisory and Oversight Program Direction					
Operating Expenses	$13,389 a/b/	$12,450 b/	$0	$12,450	$9,780 c/
Subtotal Program	13,389	12,450	0	12,450	9,780
Adjustment	-6 d/	-500 d/	0	-500	0
Total Program	$13,383	$11,950	$0	$11,950	$9,780
Summary					
Operating Expenses	$13,383	$11,950	$0	$11,950	$9,780
Total Program	$13,383	$11,950	$0	$11,950	$9,780
Staffing (FTEs)	124 a/b/	100 b/	0	100	79 c/

Authorization: Section 209, P.L. 95-91, "Department of Energy Organization Act."

a/ Includes 7 FTEs and $700,000 for the Office of the Secretary of Energy Advisory Board, which was transferred to Human Resources and Administration, and 27 FTEs and $1,711,000 for science and education programs which were incorporated into the University and Science Education program in FY 1995.

b/ Includes staffing resources related to the newly established Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness (16 FTEs and $1,445,000 in FY 1994 and 18 FTEs and $1,760,000 in FY 1995).

c/ Excludes 19 FTEs and $2,170,000 transferred to the Technology Partnerships program.

d/ Share of Energy Supply R&D general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

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(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Advisory and Oversight Program Direction

FY 1995 Appropriation	$ 12,450
- Adjustment	0
FY 1995 Adjusted	$ 12,450
- Personnel Compensation - Reflects transfer of 19 FTEs to the Technology Partnerships program and other FTE reductions, offset by increases as a result of within-grade increases and pay raises	- 1,633
- Personnel Benefits - Decrease commensurate with personnel compensation	- 337
- Travel - Reflects transfer to the Technology Partnerships program and administrative reduction	- 265
- Contractual services - Reflects transfer to the Technology Partnerships program and administrative reduction	- 435
FY 1996 Congressional Budget Request	$ 9,780

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ADVISORY AND OVERSIGHT PROGRAM DIRECTION

I. Preface: Advisory and Oversight Program Direction

This program provides the Federal staffing and associated funding resources required to carry out the traditional science and technology responsibilities of the Office of Energy Research in accordance with the Department of Energy Organization Act (P.L. 95-91), including providing scientific and technical advice on DOE research and development projects, programs, plans, policies, and science and technology strategic planning; assessing and advising on the overall strength and vitality of the multiprogram laboratory system; infrastructure resource management activities; an ER industry collaboration R&D program; and other responsibilities as mandated by the Secretary in areas beyond the scope of the other assigned Energy Research programs. It also provides the staffing and associated funding resources required by the Office of Environment, Safety and Health Technical Support and related program and management support. Staff related to management of the science education activities is transferred to the Office of Science Education and Technical Information and is budgeted in FY 1995 in the University and Science Education program. Staff related to technology transfer and utilization issues and managing the Department's enhanced technology transfer program is transferred to the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness and is budgeted in FY 1996 in the Technology Partnerships program. Performance indicators are: quality and support of overall departmental plans; improvements in R&D programs engendered by assessments and reviews; efficiencies in ES&H procedures and improvements in pollution prevention and compliance programs; improvement in environmental decisionmaking by ER and DOE; and improving stewardship of the environment at ER sites.

II. A. Summary Table: Advisory and Oversight Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 8,795	$ 7,849	$ 6,216	$ -1,633
Personnel Benefits	1,635	1,756	1,419	-337
Travel	1,000	965	700	-265
Contractual Services	1,959	1,880	1,445	-435
Total, Advisory and Oversight Program Direction	$ 13,389	$ 12,450	$ 9,780	$ -2,670

II. B. Laboratory and Facility Funding Table: Advisory and Oversight Program Direction

All Other	$ 13,389	$ 12,450	$ 9,780	$ -2,670
Total, Advisory and Oversight Program Direction	$ 13,389	$ 12,450	$ 9,780	$ -2,670

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Advisory and Oversight Program Direction			
Personnel Compensation	Provided funds for personnel compensation for 117 full-time equivalents (FTEs) for the Energy Research organizations and functions described below and 7 FTEs related to the Office of the Secretary of Energy Advisory Board (SEAB) responsibilities. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards.	Provide funds for personnel compensation for 100 FTEs for the organizations and functions described below. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.	Provide funds for personnel compensation for 79 FTEs for the organizations and functions described below. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.
	The Office of Program Analysis and the Science and Technology Affairs Staff provided advice on matters relating to the Department's research and development programs and provided technical analyses, planning and assessments in support of departmental strategic planning; DOE-wide requirements of the Energy Policy Act of 1992; and for issues that span environment, economics, and technology. Served as a principal liaison with other Government science agencies and with technical and professional societies. Performed technical assessments, independent peer reviews and program evaluations in support of the Department's research and development goals and science and technology issues. Supported the Lawrence and Fermi Awards process.	Provide 23 FTEs to consolidate and support ongoing activities. Provide technical analyses, planning and assessments in support of departmental strategic planning; DOE-wide requirements of the Energy Policy Act of 1992; departmental support on the National Science and Technology Council; preparation of initiatives for contract reform; and for issues that span environment, economics, and technology. Serve as a principal liaison with other Government science agencies and with technical and professional societies. Continue to perform technical assessments, independent peer reviews and program evaluations in order to advise the Secretary on the Department's research and development programs. Continue to support the Lawrence and Fermi Awards process.	Provide 20 FTEs to streamline and support ongoing activities. Provide technical analyses, planning and assessments in support of departmental strategic planning; DOE-wide requirements of the Energy Policy Act of 1992; departmental support on the National Science and Technology Council; preparation of initiatives for contract reform; and for issues that span environment, economics, and technology. Serve as a principal liaison with other Government science agencies and with technical and professional societies. Continue to perform at a reduced level of effort technical assessments, independent peer reviews and program evaluations in order to advise the Secretary on the Department's research and development programs. Continue to support the Lawrence and Fermi Awards process.

III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	The laboratory management staff managed uniform DOE-wide processes for continuous improvement of institutional planning, work-for-others (WFO), laboratory-directed research and development (LDRD), and laboratory appraisal. Ensured continuous improvement of independent analyses on institutional planning issues and strengthened the laboratory appraisal process for greater contractor accountability. Performed special projects, participated in task forces, and managed quarterly laboratory directors' meetings with the Secretary to ensure effective issue resolution and follow-up on all action decisions. Continue to support ER laboratory director meetings.	Provide 8 FTEs to continue to support uniform DOE-wide institutional policy and oversight related to utilization of the Department's multiprogram laboratories as in FY 1994. Continue to improve independent analyses on institutional planning issues and to strengthen the laboratory appraisal process for greater contractor accountability. Continue to perform special projects, participate in task forces, and manage quarterly laboratory directors meetings with the Secretary. Continue to support ER laboratory director meetings.	Provide 8 FTEs to continue to support uniform DOE-wide institutional policy and oversight related to utilization of the Department's multiprogram laboratories. Continue to improve independent analyses on institutional planning issues and to strengthen the laboratory appraisal process for greater contractor accountability. Continue to perform special projects, participate in task forces, and manage quarterly laboratory directors meetings with the Secretary. Continue to support ER laboratory director meetings.
	The ER technology transfer program staff managed over 150 cooperative research and development agreements (CRADAs) between ER laboratories and industry. Planned and implemented the ER laboratory technology transfer (LTT) program, including designing criteria for government/industry partnerships; managing the American Textiles Consortium (AMTEX) partnership; and development of technology transfer evaluation activities. Represented ER at an increased number of technology transfer and industry collaboration activities.	Provide 10 FTEs to continue to plan and implement the expanded ER Laboratory Technology Transfer Program. Manage the increased number of CRADAs, personnel exchanges, and other individual collaborations; manage the national AMTEX partnership involving all DOE laboratories, multiple DOE program offices, and other Federal agencies; participate in and support R&D projects in DOE's other major industry partnerships, including PNGV, gas and oil, flat panel displays, manufacturing, and biomedical technology; represent ER in all internal DOE and interagency technology transfer initiatives. Continue to manage expanded programs at new Industry Collaboration Centers at the Energy Research laboratories. Manage R&D projects in the six national critical technology program areas: materials, computing, manufacturing, electronics and health, biotechnology and health, and energy and environment.	Provide 10 FTEs to continue to plan and implement the ER Laboratory Technology Transfer Program. Manage the increased number of CRADAs, personnel exchanges, and other individual collaborations; manage the AMTEX partnership involving all DOE laboratories, multiple DOE program offices, and other Federal agencies; participate in DOE's other major industry partnerships, including PNGV, gas and oil, flat panel displays, manufacturing, and biomedical technology; represent ER in all internal DOE and interagency technology transfer initiatives. Continue to manage expanded programs at Industry Collaboration Centers at the Energy Research laboratories. Manage R&D projects in the six national critical technology program areas: materials, computing, manufacturing, electronics and health, biotechnology and health, and energy and environment. Focus each ER laboratory's industry R&D collaboration program in the critical

III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)		Focus each ER laboratory's industry R&D collaboration program in the critical technology areas where the laboratories' core competencies are strongest. Expand evaluation activities to include additional technology transfer responsibilities. Manage the technology transfer and industry R&D collaboration program at ER laboratories to ensure delegated project selection and management responsibilities are implemented according to statutory requirements. Strengthen oversight to ensure contractor accountability for management of delegated technical and financial responsibilities.	technology areas where the laboratories' core competencies are strongest. Expand evaluation activities to include additional technology transfer responsibilities. Manage the technology transfer and industry R&D collaboration at ER laboratories to ensure delegated project selection and management responsibilities are implemented according to statutory requirements. Strengthen oversight to ensure contractor accountability for management of delegated technical and financial responsibilities.
	The former Office of Technology Utilization implemented the technology utilization function. Developed policy and advised on technology transfer and utilization issues which cut across program lines. Supported the Energy Policy Act of 1992, including using joint ventures and extending DOE/industry cooperation. Supported ongoing DOE task force efforts and interagency technology transfer efforts. Applied the Freedom of Information Act exemptions of Stevenson-Wydler to all DOE technology transfer agreements. Supported establishment of effective linkages with the technology transfer offices of state and local governments, industry associations, colleges and universities. Evaluated DOE's enhanced technology transfer program. Organized, implemented and evaluated a comprehensive DOE-wide outreach strategy. Monitored transfer of the results of DOE's research activities to commercial use. Provided policy	Provide 18 FTEs to support the Department's Strategic Plan and goal in Industrial Competitiveness (IC), including an approach to integrate and deploy IC goals in all program strategic plans. Manage priority setting, selection and balance of major partnerships involving multiple program, laboratory and industry sectors. Make DOE laboratories and facilities available as an integrated technical resource for private and public sector partnerships. Coordinate DOE partnership activities with other Federal agencies and the National Science and Technology Council. Coordinate development of metrics and information to report on the benefits resulting from the Department's technology partnership activities. Determine through repeat partnerships, survey and partner feedback, the level of satisfaction with DOE performance in partnerships and determine degree of diversity. Evaluate technology partnerships and approaches used in the	TRANSFER: Staffing resources for these activities are transferred to the Technology Partnerships program in FY 1996.

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III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	recommendations on the specific issues related to technology transfer with small business, as required by the Small Business Technology Transfer Act and the Defense Authorization Act for FY 1993. Coordinated and supported the Technology Transfer Committee and its working groups and subcommittees. Developed and evaluated training and performance measurements. Completed crosscutting studies. Monitored compliance of the CRADA approval process with statutory provisions.	Department, other Federal agencies and private sector to foster commercialization and improved competitiveness. Foster testing and use of new concepts in DOE. Coordinate development of policy and simplified procedures to improve and streamline the DOE technology partnership processes. Provide resolution of major issues facing specific partnership arrangements. Analyze domestic and international policy developments affecting industrial competitiveness, technology partnerships and economic competitiveness. Develop, coordinate and present DOE position as appropriate. Develop a communications strategy to inform industry of available departmental resources. Provide customer driven information management infrastructures. Provide a DOE focal point of contact for the private sector and other Federal agencies. Increase the number of businesses accessing information. Make DOE facilities easier to access. Develop and conduct Department-wide outreach and training to provide technology partnership and industrial competitiveness information to internal and external audiences.	

III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	The infrastructure resource management staff managed the General Purpose Facilities (GPF) subprogram, the Tiger Team Remediations (ES&H) subprogram, and the new Inactive and Surplus Facilities subprogram under the Multiprogram Energy Laboratories-Facilities Support (MEL-FS) program, to ensure improved infrastructure and compliance with ES&H requirements. Continued to oversee development of the Condition Assessment Survey (CAS) and Capital Assets Management Process (CAMP) for ER laboratories, the maintenance management program at ER laboratories, and managing the GPP and GPE funding for Oak Ridge National Laboratory (ORNL) and Oak Ridge Institute for Science and Education (ORISE). Prepared policy and plans to implement requirements of the Energy Policy Act of 1992. Reviewed Corrective Action Plan implementation by multiprogram energy laboratories and enhanced landlord oversight activities.	Provide 8 FTEs to continue to manage the MEL-FS program. Review and recommend approval of GPP projects above $1,800,000 and manage landlord funding for ORNL and ORISE. Carry out the MEL-FS program including implementing the Inactive and Surplus Facilities subprogram and managing the GPP and GPE funding for ORNL and ORISE. Implement requirements of the Energy Policy Act of 1992. Continue review of ES&H Management Plan implementation by multiprogram energy laboratories and enhance landlord oversight activities.	Provide 8 FTEs to continue to manage the MEL-FS program. Review and recommend approval of GPP projects above $1,800,000 and manage landlord funding for ORNL and ORISE. Carry out the MEL-FS program and manage the GPP and GPE funding for ORNL and ORISE. Implement requirements of the Energy Policy Act of 1992. Continue review of ES&H Management Plan implementation by multiprogram energy laboratories and enhance landlord oversight activities.
	The Office of Space was abolished in the 1993 departmental realignment. The remaining policy functions and staffing resources were transferred to the Office of Policy, Planning, and Program Evaluation in FY 1994.	No activity.	No activity.

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III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	The Office of Science Education and Technical Information supported activities at the seven designated Science Education Centers and other DOE facilities in support of the National Education Goals. Supported priorities in public science literacy as well as other precollege and undergraduate programmatic areas. Supported public/private sector collaborations, science teacher preparation and enhancement initiatives, mathematics education programs and other efforts to increase participation of minorities and women in a variety of activities supported by the Department. Interacted with outside organizations to develop model state plans for education reform and improvements. Continued to support the EPSCoR effort and activities related to the on-line program information system for university and other researchers. Assisted with required reports, technical studies, plans, and management activities designed to achieve needed improvement and upgrading of university research reactors and associated instrumentation and equipment. Supported undergraduate education efforts and efforts in evaluation.	TRANSFER: Staffing resources for these activities are transferred to the University and Science Education program in FY 1995.	No activity.

III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	The Office of Environment, Safety, and Health (ES&H) Technical Support provided ES&H leadership and technical support to the Director of ER and the ER program offices. Responded to ES&H directives, regulations, and other DOE, EPA, OSHA, NEPA requirements and Executive Orders. Served as the ER NEPA Compliance Officer and the ER principal contact for all incident notifications through the Emergency Operations Center (EOC). Upgraded safety documentation and technical safety requirements for facility operations, coordinated ES&H training for ER staff, sponsored two semiannual ES&H Coordination Meetings for Headquarters and field, implemented OSHA and quality assurance, conduct of operations and operational readiness review initiatives as well as new requirements for fire protection. Performed action item tracking, follow-up efforts, ES&H data reviews for lessons learned, trend analyses, quality assurance and continuous improvement. Served as the Radiological Control Program Coordinator and ER's Pollution Prevention Coordinator. Assessed implementation of Corrective Action Plans. Implemented generic ES&H activities: prepared annual 5-year ES&H plan and quarterly Performance Indicator reports; managed occurrence reporting and incident reporting activities; and served as focal point for interactions on ES&H Orders and standards and for responding to Defense Nuclear Facilities Safety Board (DNFSB) recommendations. Performed liaison and interaction activities with other Headquarters offices, Operations Offices and laboratories on ES&H matters. Conducted NEPA training at	Provide 19 FTEs to continue to provide ES&H leadership and technical support to the Director of ER and the ER program offices. Respond to ES&H directives, regulations, and other DOE, EPA, OSHA, NEPA requirements and Executive Orders. Continue to serve as the ER NEPA Compliance Officer and the ER principal contact for all incident notifications through the EOC. Upgrade safety documentation and technical safety requirements for facility operations, sponsor semiannual ES&H Coordination Meetings for Headquarters and field, implement OSHA conduct of operations, operational readiness reviews and quality assurance initiatives and fire protection requirements, and review implementation plans for new nuclear safety rules. Perform action item tracking, follow-up efforts, ES&H data reviews for lessons learned, trend analyses, quality assurance and continuous improvement. Serve as the Radiological Control Program Coordinator and ER's Pollution Prevention Coordinator. Assess progress in implementing Compliance Action Plans. Implement generic ES&H activities: prepare annual 5-year ES&H plan and quarterly Performance Indicator Summary; manage occurrence reporting and incident reporting activities; manage ER emergency preparedness program; manage ER involvement in DOE standards programs; and serve as focal point for interactions on ES&H Orders and standards and for responding to DNFSB recommendations. Prepare annual NEPA Program Summary and Report on Continuous Improvement. Manage major technical support services contract.	Provide 19 FTEs to continue to provide ES&H leadership and technical support to the Director of ER and the ER program offices. Respond to ES&H directives, regulations, and other DOE, EPA, OSHA, NEPA requirements and Executive Orders. Continue to serve as the ER NEPA Compliance Officer and the ER principal contact for all incident notifications through the EOC. Upgrade safety documentation and technical safety requirements for facility operations, sponsor semiannual ES&H Coordination Meetings for Headquarters and field, implement OSHA conduct of operations, operational readiness reviews and quality assurance initiatives and fire protection requirements, and review implementation plans for new nuclear safety rules. Perform action item tracking, follow-up efforts, ES&H data reviews for lessons learned, trend analyses, quality assurance and continuous improvement. Serve as the Radiological Control Program Coordinator and ER's Pollution Prevention Coordinator. Assess progress in implementing Compliance Action Plans. Implement generic ES&H activities: prepare annual 5-year ES&H plan and quarterly Performance Indicator Summary; manage occurrence reporting and incident reporting activities; manage ER emergency preparedness program; manage ER involvement in DOE standards programs; and serve as focal point for interactions on ES&H Orders and standards and for responding to DNFSB recommendations. Prepare annual NEPA Program Summary and Report on Continuous Improvement. Manage major technical support services contract.

III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	Operations Offices. Prepared second annual ER NEPA Program Summary and Report on Continuous Improvement in NEPA services and products.		
	Provided program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, policy review and coordination, information resources management, and construction management support. Also managed the previously ceiling-exempt special employment programs.	Provide 14 FTEs to continue to provide for a wide variety of program and management support and services to the ER staff as in FY 1994 and to continue to support the Department's special employment programs.	Provide 14 FTEs to continue to provide for a wide variety of program and management support and services to the ER staff as in FY 1994 and FY 1995 and to continue to support the Department's special employment programs.
	Provided funds for personnel compensation for seven FTEs for the Office of SEAB, which was transferred to Human Resources and Administration in the 1993 OOE realignment.	TRANSFER: Staffing resources for these activities are transferred to Human Resources and Administration in FY 1995.	No activity.
	$ 8,795	$ 7,849	$ 6,216
Personnel Benefits	Funded civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 1,635	$ 1,756	$ 1,419
Travel	Provided funds for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.	Provide at a reduced level funds for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.	Provide at a reduced level funds for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation. Reflects transfer to Technology Partnerships.

III. Advisory and Oversight Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Travel (Cont'd)	$ 1,000	$ 965	$ 700
Contractual Services	Provided a variety of program support such as printing and editing and contractual services, including, for example, support for ES&H and security activities, timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.	Provide at a reduced level a variety of program support such as printing and editing and contractual services, including, for example, support for ES&H and security activities, timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.	Provide at a reduced level a variety of program support such as printing and editing and contractual services, including, for example, support for ES&H and security activities, timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations. Reflects transfer to Technology Partnerships.
	$ 1,959	$ 1,880	$ 1,445
Advisory and Oversight Program Direction	$ 13,389	$ 12,450	$ 9,780

OVERVIEW

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

Attaining the science and technology goals of the Department will require intensive use of the major multiprogram energy laboratories reporting to Energy Research. The major laboratories covered by this program are: Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), Lawrence Berkeley Laboratory (LBL), Oak Ridge National Laboratory (ORNL), Pacific Northwest Laboratory (PNL) and Oak Ridge Institute for Science and Education (ORISE). All facilities at these laboratories are government-owned contractor-operated (GOCO) and have an estimated replacement cost of over $10 billion dollars. The average age of laboratory facilities is 30 years. This program carries out the appropriate federal role of maintaining the taxpayers' investment in the major general purpose facilities at these laboratories.

The strategy of the Multiprogram Energy Laboratory - Facilities Support (MEL-FS) program is to select and support projects necessary to: (1) maintain operations of the laboratories in a safe, cost-effective, environmentally responsible, and productive manner; (2) reduce the backlog of facility deficiencies; (3) address Environment, Safety and Health (ES&H) remediation needs; (4) remove inactive general purpose facilities that are surplus to current and planned operations and costly to maintain; and (5) clean up contaminated portions of general purpose facilities and maintain and prepare for transfer to the Office of Environmental Management (EM) appropriate contaminated general purpose facilities (GPF) for decontamination and decommissioning (D&D).

The MEL-FS program is composed of three subprograms. The general purpose facilities subprogram provides line item construction support for the rehabilitation and replacement of the general purpose facilities at the laboratories. General purpose facilities include general use, service and support facilities such as administrative space, general office/laboratory space, utility systems, sanitary sewers, roads, etc. Operating funds are provided to support program planning, management, and maintenance activities related to this effort. These include implementing the Condition Assessment Survey and Capital Assets Management Process (CAMP), site development planning and preparation of reports required by Section 2203(d) of the Energy Policy Act of 1992. Line item construction projects are those with a total estimated cost (TEC) of $2 million or higher. The GPF subprogram also includes General Plant Projects (GPP) and General Purpose Equipment (GPE) in support of landlord responsibilities at ORNL and ORISE. GPP funds are essential in providing the laboratories and the Department with flexibility to meet emergency needs and rapidly emerging small construction needs, i.e., those with a TEC of $2 million or less. GPE funds provide all the non-programmatic equipment at a laboratory such as communication, general-use computers, vehicles, etc.

The Environment, Safety, and Health (ES&H) Support subprogram provides support necessary to correct site-wide ES&H deficiencies identified and prioritized via the DOE ES&H Management Plan. Correcting these deficiencies that have accumulated over many years represents a significant burden to current program budgets at the laboratories. This subprogram helps relieve that burden while providing effective Headquarters oversight of ES&H activities that are not related to a single program and serve all programs at the laboratory. Operating and capital equipment funds support the highest priority compliance-related corrective actions. These include upgrades to fire protection programs; radiological assistance programs; safety and health training programs; pollution prevention through source reductions; recycling projects; education, design and process initiatives; implementation of chemical tracking programs; effective effluent monitoring; air monitoring activities; emergency response equipment improvements; and underground storage tank compliance. The subprogram also funds line item construction projects to correct ES&H deficiencies; and initiatives to address the highest priority cross-laboratory ES&H issues such as identifying and transferring "noteworthy practices."

The Inactive and Surplus Facilities subprogram provides operating funds to better manage the large number of retired, inactive and contaminated general purpose facilities at the laboratories covered by the program. Most of these laboratories date back to the 1940's and have many facilities that have outlived their usefulness. These facilities cannot be economically maintained or renovated to house current or planned activities and must be retired. In addition, portions of some operating facilities may be inactive due to contamination and must be cleaned up. Those contaminated facilities that qualify for clean-up by EM will be maintained and prepared for transfer in accordance with established criteria. The backlog of activities at the laboratories to be funded by this program is estimated to be $250 million. The Inactive and Surplus

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Facilities subprogram is designed to modify and/or dispose of these facilities in a comprehensive and systematic manner in order to reduce surveillance and maintenance costs, eliminate ES&H liabilities, and to provide for better utilization of site space and land.

The benefits to be gained from supporting the MEL-FS program are: improved laboratory safety, security and environmental compliance levels; reduced health and safety risks; decreased operating costs and improved productivity; and continuity of operations. The program also provides continuity and a broad basis for establishing overall laboratory general purpose infrastructure needs and priorities. The program directly supports the specific science and technology objective to "operate and maintain a cost-effective national laboratory infrastructure." In accomplishing this objective, the program enables the accomplishment of many of the other Departmental strategic planning goals and objectives.

Performance measures used for the MEL-FS program activities include: the number of new construction starts; the square footage of new or rehabilitated buildings; the percentage of high priority ES&H requirements met; the number of inactive/surplus facilities disposed of; the backlog of requirements; and the rate of replacement of equipment. The measures are discussed in the various subprograms as applicable.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Multiprogram Energy Laboratories - Facilities Support

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
General Purpose Facilities	$668	$595	$0	$595	$595
Environment, Safety and Health Support	595	6,007	0	6,007	8,157
Inactive and Surplus Facilities	478	500	0	500	500
Subtotal Operating Expenses	1,741	7,102	0	7,102	9,252
Capital Equipment					
General Purpose Facilities	5,821	5,787	0	5,787	5,787
Environment, Safety and Health Support	485	500	0	500	500
Subtotal Capital Equipment	6,306	6,287	0	6,287	6,287
Construction					
General Purpose Facilities	26,429	23,572	-1,765	21,807	21,228
Environment, Safety and Health Support	5,598	7,838	0	7,838	14,249
Subtotal Construction	32,027	31,410	-1,765	29,645	35,477
Subtotal Program	$40,074	$44,799	-$1,765	$43,034	$51,016
Adjustment	-747 a/	-1,408 a/	----	-1,408 a/	----
TOTAL PROGRAM	$39,327 b/	$43,391	-$1,765	$41,626	$51,016
Summary					
Operating Expenses	$1,716	$7,102	$0	$7,102	$9,252
Capital Equipment	6,306	6,287	0	$6,287	6,287
Construction	31,305	30,002	-1,765	$28,237	35,477
TOTAL PROGRAM	$39,327	$43,391	-$1,765	$41,626	$51,016

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977), Section 647

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.
b/ Excludes $26,000 which was transferred to the SBIR program and $1,000 which was transferred to the STTR program.

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

SUMMARY OF CHANGES

Multiprogram Energy Laboratories - Facilities Support

FY 1995 Appropriation	$ 44,799
- Adjustment	- 1,765
FY 1995 Adjusted	$ 43,034
- Supports continuation/completion of 5 ongoing GPF projects with one project (ORNL Roofing) slowed. No new projects initiated	- 579
- Supports continuation/completion of 6 ongoing ES&H projects and initiation of 3 new starts	+ 6,411
- Supports increased operating funding to correct ES&H deficiencies	+ 2,150
FY 1996 Congressional Budget Request	$ 51,016

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

The General Purpose Facility (GPF) operating funds support the planning, management, and maintenance activities related to this subprogram. Funding supports development and implementation of site facilities planning systems at the laboratories such as the DOE Condition Assessment Survey, the Capital Assets Management Process, Site Development Planning and Real Property Inventory System, etc. Funds are also used to support efforts to integrate requirements across laboratories to develop comprehensive identification of needs and plans such as those required by EPACT. Section 2203(d) of the Act requires annual submission of a "plan for conducting future facility maintenance, making repairs, modifications and new additions and constructing new facilities at multiprogram energy laboratories." The operating funds also support site-wide maintenance needs related to general purpose facilities.

The benefits to be gained from the general purpose facilities operating funds are better identification and prioritization of infrastructure requirements.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 668	$ 595	$ 595	$ 0
Total, General Purpose Facilities	$ 668	$ 595	$ 595	$ 0

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

Argonne National Lab (East)	$ 90	$ 90	$ 50	$ -40
Brookhaven National Lab	90	90	50	-40
Lawrence Berkeley Lab	89	90	50	-40
Oak Ridge Institute for Science & Education	35	35	20	-15
Oak Ridge National Lab	114	90	50	-40
Pacific Northwest Lab	97	50	50	0
All Other	153	150	325	175
Total, General Purpose Facilities	$ 668	$ 595	$ 595	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Facilities			
Operating Expenses	Provided support to laboratories for infrastructure planning and management activities, such as support for developing and implementing the DOE Condition Assessment Survey (CAS) and Capital Assets Management Process (CAMP) including preparation of Laboratory Integrated Facilities Plans. ($479)	Provides support to laboratories for infrastructure planning and management activities, such as support for developing and implementing the DOE Condition Assessment Survey (CAS) and Capital Assets Management Process (CAMP) including preparation of Laboratory Integrated Facilities Plans. ($400)	Provides support to laboratories for infrastructure planning and facilities management activities including support for developing and implementing the DOE Facilities Information Management Systems (FIMS), DOE Condition Assessment Survey (CAS), Capital Assets Management Process (CAMP), and the DOE Site Development Planning process, as well as site-wide maintenance needs related to general purpose facilities. ($532)
	EPACT:	EPACT:	EPACT:
	EPACT Section 2203(b) "Supporting Research and Technical Analysis":	EPACT Section 2203(b) "Supporting Research and Technical Analysis":	EPACT Section 2203(b) "Supporting Research and Technical Analysis":
	Provided architectural and engineering contractor support to aid in the preparation of a facility policy and plan for the multiprogram energy laboratories as required by Section 2203(d) of the Energy Policy Act of 1992. ($189)	Provides architectural and engineering contractor support to aid in the preparation of a facility policy and plan for the multiprogram energy laboratories as required by Section 2203(d) of the Energy Policy Act of 1992. ($182)	Provides contractor support to aid in the annual update of facilities plan for the multiprogram energy laboratories required by Section 2203(d) of the Energy Policy Act of 1992. ($50)
	Funding in the amount of $10,000 and $1,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $12,000 and $1,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $12,000 and $1,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 668	$ 595	$ 595
General Purpose Facilities	$ 668	$ 595	$ 595

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Environment, Safety & Health Support

The Department has undertaken a thorough review of the environment, safety and health (ES&H) compliance at its laboratories and has identified deficiencies in the annual DOE ES&H Management Plan. Deficiencies have been identified in the environmental area, including noncompliance with laws and regulations e.g., air, water, hazardous materials. Deficiencies have been identified in occupational safety and health, fire protection, emergency preparedness, safety and hazards analyses, conduct of operations, configuration management, work practices and radiation protection. The Environment, Safety and Health (ES&H) Support subprogram provides the support required to correct the highest priority general ES&H deficiencies identified in the ES&H Management Plan.

II. A. Summary Table: Environment, Safety & Health Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 595	$ 6,007	$ 8,157	$ 2,150
Total, Environment, Safety & Health Support	$ 595	$ 6,007	$ 8,157	$ 2,150

II. B. Laboratory and Facility Funding Table: Environment, Safety & Health Support

Argonne National Lab (East)	$ 73	$ 970	$ 1,000	$ 30
Brookhaven National Lab	42	942	1,000	58
Lawrence Berkeley Lab	165	916	1,000	84
Oak Ridge Institute for Science & Education	30	0	0	0
Oak Ridge National Lab	285	1,867	2,000	133
Pacific Northwest Lab	0	500	500	0
All Other	0	812	2,657	1,845
Total, Environment, Safety & Health Support	$ 595	$ 6,007	$ 8,157	$ 2,150

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety & Health Support			
Operating Expenses	Supported the most critical and highest priority corrective actions and compliance issues identified in the ES&H Management Planning process including the continuation of safety program development; safety training; hazard identification and analysis; health and safety manual improvements and restructuring (LBL); hazardous materials training for compliance with RCRA, DOT, OSHA, supplies (LBL); Clean Air Act Permit analysis work at ANL; installation of radiation signs and labels at BNL; underground storage tank removals at ORISE and ORNL; machine guarding at ORNL; and repair of a leak in the reactor pool at the retired Oak Ridge Reactor. ($571)	Increases support for the most critical and highest priority corrective actions and compliance issues identified in the ES&H Management Planning process. Examples are: pollution prevention activities through source reduction including chlorofluorocarbon replacement; operating permit development including source identification; upgrades in environmental monitoring practices and procedures; and enhanced hazard assessment and risk prioritization abilities. ($5,511)	Increases support for the highest priority corrective actions and compliance issues identified in the ES&H management planning process. Examples are: pollution prevention activities through source reduction and process identification; electrical safety upgrades; fire protection upgrades; UST compliance; industrial hygiene and safety and health upgrades; and facility configuration upgrades. ($7,182)
	Pollution prevention projects at ORNL. ($24)	Proactively addresses the highest priority cross-laboratory ES&H issues such as identifying and transferring "noteworthy practices" and promoting needed process improvements in high priority areas such as pollution prevention. ($300)	Proactively addresses the highest priority cross-laboratory ES&H issues such as identifying and transferring "noteworthy practices" and promoting needed process improvements in high priority areas such as pollution prevention. ($800)
	No activity.	Develops site-wide ES&H performance evaluation process. ($70)	No activity.
	Funding in the amount of $9,000 has been transferred to the SBIR program.	Funding in the amount of $120,000 and $6,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $163,000 and $12,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 595	$ 6,007	$ 8,157
Environment, Safety & Health Support	$ 595	$ 6,007	$ 8,157

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Inactive and Surplus Facilities

It is the policy of the Department to maintain only those facilities necessary to effectively and economically perform assigned missions and tasks. As research programs' technologies change over the course of time, some existing general purpose facilities (or portions of them) have become permanently inactive. These facilities must be cleaned up if they are to be reused, or removed if they are determined to be surplus. The backlog of activities to be funded by this program is estimated to be $250 million.

Three categories of facilities are covered in the subprogram:

-- removal of inactive/retired facilities that cannot be economically maintained or renovated to house current or planned activities.

-- areas of operating facilities that are inactive due to discontinued activities and must be cleaned up for re-use due to operational and liability concerns.

-- preparation for transfer of contaminated facilities that qualify for clean-up by EM.

II. A. Summary Table: Inactive and Surplus Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 478	$ 500	$ 500	$ 0
Total, Inactive and Surplus Facilities	$ 478	$ 500	$ 500	$ 0

II. B. Laboratory and Facility Funding Table: Inactive and Surplus Facilities

Argonne National Lab (East)	$ 98	$ 100	$ 75	$ -25
Brookhaven National Lab	139	75	75	0
Lawrence Berkeley Lab	0	0	75	75
Oak Ridge Institute for Science & Education	79	75	25	-50
Oak Ridge National Lab	155	160	200	40
Pacific Northwest Lab	7	75	40	-35
All Other	0	15	10	-5
Total, Inactive and Surplus Facilities	$ 478	$ 500	$ 500	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Inactive and Surplus Facilities			
Operating Expenses	Provided for demolition and removal of 10 buildings at various sites, including Bldg. 529, 5268, and 195 at BNL; Bldg. 25 at ANL; Bldg. 9982 at ORNL; and various buildings at ORISE. Also, allowed characterization of retention tanks in Bldg. 310 at ANL prior to transfer to EM. ($478)	Continues support to determine clean-up/demolition/transfer requirements for high priority facilities; preparatory work to transfer those contaminated facilities that EM will accept; and removal and/or clean-up of selected inactive surplus facilities that cannot be transferred to EM. ($490)	Continues support to determine clean-up/demolition/transfer requirements for high priority facilities; preparatory work to transfer those contaminated facilities that EM will accept; and removal and/or clean-up of selected inactive surplus facilities that cannot be transferred to EM. ($490)
	Funding in the amount of $7,000 has been transferred to the SBIR program.	Funding in the amount of $10,000 has been budgeted for the SBIR program.	Funding in the amount of $10,000 has been budgeted for the SBIR program.
	$ 478	$ 500	$ 500
Inactive and Surplus Facilities	$ 478	$ 500	$ 500

DEPARTMENT OF ENERGY
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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

This subprogram provides funding for general purpose equipment responsibilities at ORNL and ORISE. General purpose equipment funding provides for non-programmatic equipment at a laboratory, such as communications, general-use computers, vehicles, etc. The investment in general purpose equipment at ORNL and ORISE supported by GPE funding is over $100 million.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capital Equipment	$ 5,821	$ 5,787	$ 5,787	$ 0
Total, General Purpose Facilities	$ 5,821	$ 5,787	$ 5,787	$ 0

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

Oak Ridge National Lab	$ 5,675	$ 5,318	$ 5,637	$ 319
Oak Ridge Institute for Science & Education	146	469	150	-319
Total, General Purpose Facilities	$ 5,821	$ 5,787	$ 5,787	$ 0

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Facilities			
Capital Equipment	Provided GPE funding for ORNL and ORISE including purchase of fleet replacement, additional industrial safety equipment, and health monitoring equipment. It also included replacement of ozone depleting heating, ventilation and air conditioning equipment. ($5,821)	Provided GPE funding for ORNL and ORISE including purchase of fleet replacement, additional industrial safety equipment, and health monitoring equipment. It also included replacement of ozone depleting heating, ventilation and air conditioning equipment and replacement of underground storage tanks. ($5,787)	Provides GPE funding for ORNL and ORISE including purchase of fleet replacement, replacement of ozone depleting heating, ventilation and air conditioning equipment and replacement of underground storage tanks. ($5,787)
	$ 5,821	$ 5,787	$ 5,787
General Purpose Facilities	$ 5,821	$ 5,787	$ 5,787

DEPARTMENT OF ENERGY
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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Environment, Safety & Health Support

The Department has undertaken a thorough review of environment, safety and health compliance at its laboratories and has identified many deficiencies. These deficiencies are identified in the DOE ES&H Management Plan prepared annually. Deficiencies have been identified in the environmental area in noncompliance with laws and regulations e.g., air, water, hazardous materials. Deficiencies have been identified in occupational safety and health, fire protection, emergency preparedness, safety and hazards analyses, conduct of operations, configuration management, work practices and radiation protection. ES&H equipment funding supports the replacement or upgrade of ES&H equipment needed to correct these deficiencies.

II. A. Summary Table: Environment, Safety & Health Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Capital Equipment	$ 485	$ 500	$ 500	$ 0
Total, Environment, Safety & Health Support	$ 485	$ 500	$ 500	$ 0

II. B. Laboratory and Facility Funding Table: Environment, Safety & Health Support

Argonne National Lab (East)	$ 51	$ 75	$ 75	$ 0
Brookhaven National Lab	73	78	75	-3
Lawrence Berkeley Lab	97	75	100	25
Oak Ridge Institute for Science & Education	0	35	25	-10
Oak Ridge National Lab	179	150	150	0
Pacific Northwest Lab	85	73	75	2
All Other	0	14	0	-14
Total, Environment, Safety & Health Support	$ 485	$ 500	$ 500	$ 0

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety & Health Support			
Capital Equipment	Provided funding for required ES&H related equipment including: pollution prevention through source reduction activities, e.g., degreaser equipment (ANL); chlorofluorocarbon replacement (LBL); work stations for computer based safety and health and environmental training (BNL); hand and foot monitors, body counters and training for the Occupational Medical Program (ORNL); and air monitoring equipment purchase and installation to comply with environmental, safety and health regulations (PNL).	Provides support for the purchase of equipment for underground storage tank compliance, chlorofluorocarbon replacement equipment, radio equipment, alpha/beta/gamma counters, and safety and health needs.	Continue to provide for replacement, upgrade and improvement in health physics equipment and environmental monitoring equipment for safety and health needs as identified in the ES&H Management Plan.
	$ 485	$ 500	$ 500
Environment, Safety & Health Support	$ 485	$ 500	$ 500

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

The subprogram funds line item construction projects (i.e., projects with a total estimated cost of $2 million or above) that correct deficiencies in general purpose facilities at multiprogram energy laboratories. General purpose facilities are general use, service and support facilities such as administrative space, cafeterias, general office/laboratory space, utility systems, sanitary sewers, roads, etc. There are over 1,000 buildings at the six laboratories covered by this program. These buildings have over 14,000,000 gross square feet of space. Less than half of the space is considered fully adequate, while the remainder needs rehabilitation or replacement/demolition. The large percentage of inadequate space reflects the age of the facilities (30 years or older), changing research needs that require more office space and light laboratory space, stricter environmental, safety and health requirements and obsolete systems.

Capital investment requirements are identified in laboratory Institutional Plans and Laboratory Integrated Facilities Plans which address needs over a five to fifteen year planning horizon based on expected programmatic support. The MEL-FS program has prepared a 5-year program plan that identifies projects totalling over $700 million for the five year period. Sixty seven percent of this amount is to rehab or replace buildings; 19% is for utility projects; and 14% for environment, safety and health projects.

Projects supported by the General Purpose Facilities subprogram are ranked using the Capital Assets Management Process Prioritization Model.

This program also provides General Plant Project (GPP) funding for ORNL and ORISE. General Plant Projects are small construction projects (i.e., those with a total estimated cost of less than $2 million). GPP funding provides flexibility to meet new or unforeseen small (i.e., those below $2 million) construction needs.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Construction	$ 26,429	$ 21,807	$ 21,228	$ -579
Total, General Purpose Facilities	$ 26,429	$ 21,807	$ 21,228	$ -579

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

Argonne National Lab (East)	4,004	3,350	2,500	-850
Brookhaven National Lab	2,842	4,942	3,710	-1,232
Lawrence Berkeley Lab	3,162	1,000	0	-1,000
Oak Ridge Institute for Science & Education	970	1,000	1,000	0
Oak Ridge National Lab	12,021	6,197	9,778	3,581
Pacific Northwest Lab	1,940	2,540	4,240	1,700

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	1,490	2,778	0	-2,778
Total, General Purpose Facilities	$ 26,429	$ 21,807	$ 21,228	$ -579

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Facilities			
Construction	Supported completion/continuation of 7 ongoing projects consistent with planned schedules and initiation of 2 new projects including utility and building rehab/upgrade projects. ($17,697)	Supports completion/continuation of 6 ongoing projects consistent with planned schedules and initiation of 4 new projects including 1 electrical safety project and 3 building rehab/upgrade projects. The square footage of new replacement lab and office space is 17,500 square feet. ($13,357)	Supports completion/continuation of 5 ongoing projects consistent with planned schedules. One ongoing project (ORNL Roofing) slowed delaying completion by one year. No new projects initiated. ($12,488)
	Supported GPP funding at ORNL and ORISE. ($8,732)	Supports GPP funding at ORNL ($7,450) and ORISE. ($1,000)	Supports GPP funding at ORNL ($7,740) and ORISE. ($1,000)
	$ 26,429	$ 21,807	$ 21,228
General Purpose Facilities	$ 26,429	$ 21,807	$ 21,228

DEPARTMENT OF ENERGY
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(dollars in thousands)

KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Environment, Safety & Health Support

The Department has undertaken a thorough review of environment, safety and health (ES&H) compliance at its laboratories and has identified many facility deficiencies. These deficiencies are identified in the DOE ES&H Management Plan prepared annually. The ES&H Support subprogram provides the support required to correct these ES&H deficiencies by funding line item construction projects (i.e., projects with a total estimated cost of $2 million or above).

Facilities deficiencies are due to the age, obsolescence, and changing requirements including stricter environment, safety and health requirements. There are over 1,000 buildings at the six laboratories covered by this program in addition to utility systems, roads and other support structures. Thirty-six percent of the building space and a like amount of the utility systems, roads and other support structures are 40 years old or older. Only 44 percent of the building space is considered fully adequate.

Candidate projects are first ranked using the Capital Assets Management Process Prioritization Model and those that have environment, safety and health as the principal driver are funded by this subprogram while the remainder are supported by the General Purpose Facilities subprogram. Projects under this subprogram are then prioritized using the Risk Prioritization Model from the DOE ES&H Management Plan process.

II. A. Summary Table: Environment, Safety & Health Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Construction	$ 5,598	$ 7,838	$ 14,249	$ 6,411
Total, Environment, Safety & Health Support	$ 5,598	$ 7,838	$ 14,249	$ 6,411

II. B. Laboratory and Facility Funding Table: Environment, Safety & Health Support

Argonne National Lab (East)	$ 825	$ 1,710	$ 4,611	$ 2,901
Brookhaven National Lab	1,869	1,660	4,820	3,160
Lawrence Berkeley Lab	1,940	3,962	4,818	856
Pacific Northwest Lab	964	506	0	-506
Total, Environment, Safety & Health Support	$ 5,598	$ 7,838	$ 14,249	$ 6,411

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety & Health Support			
Construction	Supported completion/continuation of the 5 ongoing projects consistent with planned schedules.	Supports completion/continuation of the 5 ongoing projects consistent with planned schedules and initiation of 3 new projects - a fire safety project, a sanitary system upgrade and a loss prevention upgrade.	Supports completion/continuation of the 6 ongoing projects consistent with planned schedules and initiation of 3 new projects including rehab of hot cells and support systems at BNL, building electrical service upgrade at ANL-E and sanitary sewer restoration at LBL.
	$ 5,598	$ 7,838	$ 14,249
Environment, Safety & Health Support	$ 5,598	$ 7,838	$ 14,249

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IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unapprop. Balance
Multiprogram Energy Laboratories - General Purpose Facilities							
GPE-801	General Plant Projects, ORNL	---	---	$8,732	$8,450 a/	$8,740	---
95-E-310	Multiprogram Laboratory Rehab., I (PNL)	6,100	0	0	400	2,740	2,960
95-E-303	Electrical Safety Rehab. (PNL)	6,800	0	0	240	1,500	5,060
95-E-302	Applied Science Center, Phase I (BNL)	3,870	0	0	600	3,270	0
95-E-301	Central Heating Plant Rehab, Phase I (ANL)	9,500	0	0	1,307	2,500	5,693
94-E-363	Roofing Improvements (ORNL)	16,000	0	3,136	1,525 b/	2,038	10,629
94-E-351	Fuel Storage and Transfer Facility (BNL)	3,600	0	681	2,479	440	0
93-E-325	Potable Water System Upgrade I (BNL)	5,320	1,500	1,957	1,863	0	0
93-E-313	Electrical Systems Upgrade II (ANL)	4,839	1,000	1,796	2,043	0	0
92-E-329	Electrical Substation Upgrade (ANL)	4,908	2,900	2,008	0	0	0
92-E-324	Safety Compliance Mods, 326 Building (PNL)	8,540	4,700	1,940	1,900	0	0
92-E-323	Upgrade Steam Distribution System, West End (ORNL)	8,701	6,307	2,394	0	0	0
92-E-322	East Canyon Elec. Safety Project (LBL)	3,754	1,332	1,422	1,000	0	0
88-R-806	Environmental Health & Safety Project (LBL)	13,113	11,472	1,641	0	0	0
Subtotal	Line Item Projects	$XXX,XXX	$XXX,XXX	$16,975	$13,357	$12,488	$XXX,XXX
Subtotal Multiprogram Energy Laboratories-General Purpose Facilities Construction		---	---	$25,707	$21,807	$21,228	---

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unapprop. Balance
Multiprogram Energy Laboratories - Environment, Safety and Health Support							
96-E-332	Building 801 Renovations (BNL)	6,370	0	0	0	800	5,570
96-E-331	Sanitary Sewer Restoration, Phase I (LBL)	2,400	0	0	0	2,400	0
96-E-330	Building Electrical Service Upgrade, Phase I (ANL)	7,350	0	0	0	1,200	6,150
95-E-309	Loss Prevention Upgrades (BNL)	6,970	0	0	600	2,480	3,890
95-E-308	Sanitary System Mods (BNL)	3,532	0	0	960	1,540	1,032
95-E-307	Fire Safety Improvements, III (ANL)	2,880	0	0	210	1,000	1,670
93-E-324	Hazardous Materials Safeguards I (LBL)	4,720	500	970	1,962	1,288	0
93-E-323	Fire and Safety System Upgrade I (LBL)	4,600	500	970	2,000	1,130	0
93-E-320	Fire Safety Improvements II (ANL)	5,350	390	825	1,500	2,411	224
93-E-317	Life Safety Code Compliance (PNL)	1,970	500	964	506	0	0
93-E-315	Roof Replacement, I (BNL)	2,873	904	1,869	100	0	0
Subtotal	Line Item Projects	$XXX,XXX	$XXX,XXX	$5,598	$7,838	$14,249	$XXX,XXX
Subtotal, Multiprogram Energy Laboratories - Environment, Safety and Health Support Construction		$XXX,XXX	$XXX,XXX	$5,598	$7,838	$14,249	$XXX,XXX
Subtotal Multiprogram Energy Laboratories - Facilities Support Construction		---	---	$31,305	$29,645	$35,477	---
Adjustment for Use of Prior Year Balances		---	---	0	-1,408	0	---
Total Multiprogram Energy Laboratories - Facilities Support Construction		---	---	$31,305	$28,237	$35,477	---

a/ Does not exclude general reduction for use of prior year balance of $80,000.
b/ Does not exclude general reduction for use of prior year balance of $1,328,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPE-801 General Plant Projects — TEC: $ 8,740
Various Locations — TPC: $ 8,740

Start Date: 3rd Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Obligations	Costs FY 1994	FY 1995	FY 1996	After FY 1996
FY 1994 Projects	$ 7,242a/	$ 830	$ 4,412	$ 2,000	$ 0
FY 1995 Projects	8,370	0	6,370	2,000	0
FY 1996 Projects	8,740	0	0	6,740	2,000

3. Narrative: This project is required to support landlord responsibilities at Oak Ridge National Laboratory (ORNL) and Oak Ridge Institute for Science and Education (ORISE). The estimate is for minor new construction and other capital alterations to land, buildings and utilities systems. The estimate also includes the cost of installed equipment which is an integral part of the general plant subprojects.

The current estimate is $7,740,000 for the Oak Ridge National Laboratory and $1,000,000 for the Oak Ridge Institute for Science and Education. The estimate is for minor new construction which will contribute to greater efficiency, eliminate health and safety hazards and reduce maintenance and operational costs. The total estimated cost of each project will not exceed $2,000,000.

4. Total Project Funding (B/A):

	Prior Years	FY 1994	FY 1995	FY 1996 Request
Construction.....	$ 0	$ 8,732	$ 8,450 b/	$ 8,740

a/ $1,490,000 was unobligated in FY 1994.
b/ Does not exclude $80,000 for use of prior year balances.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-310 Multiprogram Laboratory Rehabilitation, Phase I — TEC: $ 6,100
Pacific Northwest Laboratory — TPC: $ 6,640
Richland, Washington

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$ 400	$ 400	$ 300
1996	2,740	2,740	1,800
1997	2,960	2,960	3,000
1998	0	0	1,000

3. Narrative: This project is part of the Multiprogram Energy Laboratory - Facilities Support Program mission to modernize and renovate aging PNL multiprogram laboratory facilities. This project will involve the remodeling of the 3rd floor of building 331 and construction of a new facility for small animal quarters.

Leading research programs are increasing emphasis on cellular/modular studies and changing use of animal models for the dose-response studies to those which use in vitro/in vivo approaches. As a result, small animal physical facilities need to be renovated or replaced by additional laboratory facilities in which molecular biology and biochemical research can be carried out. This project responds to this new approach.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 0	$ 400	$ 2,740	$ 2,960
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	376	42	52	52	18

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-303 Electrical Safety Rehabilitation
Pacific Northwest Laboratory
Richland, Washington

TEC: $ 6,800
TPC: $ 7,600

Start Date: 4th Qtr. FY 1995 Completion Date: 3rd Qtr. FY 1999

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$ 240	$ 240	$ 150
1996	1,500	1,500	1,100
1997	1,500	1,500	1,300
1998	1,500	1,500	1,600
1999	2,060	2,060	1,500
2000	0	0	1,150

3. Narrative: This project will provide for the rehabilitation of electrical systems and correction of numerous National Electrical Code (NEC) violations in various Energy Research buildings in the 300 area of the Hanford Site.

Many of the buildings range in age from 20 to 40 years and electrical equipment and installations contained within them do not meet NEC and DOE standards and criteria for safe and efficient operations. This project will safeguard personnel working with the DOE facility electrical systems and enhance the reliability of those systems.

4. Total Project Funding (B/A):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 0	$ 240	$ 1,500	$ 5,060
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	367	0	94	88	251

IV. B. Construction Funded Project Descriptive Summary

TEC: $ 3,870
TPC: $ 3,920

1. Project Title and Location: Project 95-E-302, Applied Science Center - Phase I
Brookhaven National Laboratory
Upton, New York

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$ 600	$ 600	$ 450
1996	3,270	3,270	1,900
1997	0	0	1,520

3. Narrative: The proposed addition to the Department of Applied Science (DAS) building will provide approximately 12,000 sq. ft. of laboratory, office and support space.

The addition will be a two-story structure with an underground passageway. The first floor will be devoted principally to laboratory space with some space for offices, darkroom and bathrooms. The second floor will principally be office space with some space dedicated for a library, lunch room, etc.

The purpose of this project is to consolidate and upgrade the Department's space to alleviate the fragmentation of approximately 240 in-house DAS staff, supplemented at peak periods by research collaborating students and consultants. This fragmentation reduces the efficiency, management and opportunities for the exchange of information.

4. Total Project Funding (BA):

	Prior Years	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 600	$ 3,270	$ 0
Capital Equipment.....	0	0	0	0
Operating Expenses.....	50	0	0	0

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-301 Central Heating Plant Rehabilitation, Phase I
Argonne National Laboratory
Argonne, Illinois

TEC: $ 9,500
TPC: $ 9,675

Start Date: 3rd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1999

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$1,307	$1,307	$ 550
1996	2,500	2,500	2,620
1997	2,500	2,500	2,730
1998	3,193	3,193	2,730
1999	0	0	870

3. Warrative: This project supports rehabilitation/upgrade of central heating plant systems and components that are no longer adequate, efficient or reliable.

Assessments have identified existing conditions at the central heating plant that do not meet current health, safety and environmental protection standards. Phase I will provide the most urgently needed rehabilitation/upgrade, including (as needed): boilers, boiler auxiliaries, deaerators, condensate tanks, material transport, piping, valves, pollution control equipment, etc.

4. Total Project Funding (B/A):

	Prior Years	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 1,307	$ 2,500	$ 5,693
Capital Equipment.....	0	0	0	0
Operating Expenses.....	175	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-363, Roofing Improvements
Oak Ridge National Laboratory
Oak Ridge, Tennessee

TEC: $ 16,000
TPC: $ 16,132

Start Date: 2nd Qtr. FY 1994 Completion Date: 2nd Qtr. FY 2000

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 4,024	-4,024 a/	$ 0	$ 0
1994	3,300	- 164 b/	3,136	75
1995	3,000	-2,803 c/	197	2,000
1996	2,038	0	2,038	1,700
1997	4,768	0	4,768	1,800
1998	4,000	0	4,000	3,500
1999	1,861	0	1,861	2,000
2000	0	0	0	4,925

a/ This project was proposed as an FY 1993 new start (93-E-329). Application of a portion (-$4,024,000) of the FY 1993 programmatic general reduction of $40,000,000 necessitated a delay in the start of this project to FY 1994.
b/ Reflects reductions as follows: $-68,000 Contractor Salary Freeze; $-96,000 rescission.
c/ Reflects application of a portion ($-2,803,000) of Energy Supply, Research and Development reductions.

3. Narrative: This project supports replacement of deteriorated roofing on buildings and facilities throughout ORNL. Requirements are prioritized and those in the worst condition and housing the most critical equipment and activities will have the highest priority.

The purpose of this project is to replace deteriorated roofing on buildings and facilities at ORNL. Seventy percent of the roofs have been in place for more than 20 years. Because of age and deterioration, many of the roofs have developed leaks and require extensive maintenance. This project is needed before leakage problems reach the point that they affect equipment, records and research activities as well as the health and safety of personnel working in the facilities.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 3,136	$ 1,525 d/	$ 2,038	$ 10,629
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	132	0	0	0	0

d/ Does not exclude reduction of $1,328,000 for use of prior year balances.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-351 Fuel Storage and Transfer Facility Upgrade
Brookhaven National Laboratory
Upton, New York

TEC: $ 3,600
TPC: $ 3,650

Start Date: 2nd Qtr. FY 1995 Completion Date: 3rd Qtr. FY 1996

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$1,000	$- 319 a/	$ 681	$ 66
1995	2,479	0	2,479	2,216
1996	440	0	440	884
1997	0	0	0	434

a/ Reflects reductions as follows: $-88,000 Contractor Salary Freeze; $-27,000 rescission; and $-204,000 general reduction.

3. Narrative: This project will upgrade the existing fuel storage and transfer facility to bring it into compliance with local and state code for handling and storage of fuel oil.

This facility will consist of fuel transfer facility enclosure with unloading booms and fire detection and protection systems. This facility will be constructed on a diked containment area equipped with leak detection systems and oil/water separator. The enclosure will be approximately 5,600 square feet.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 885 b/	$ 2,479	$ 440	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	50	0	0	0	0

b/ Does not exclude reduction of $204,000 for use of prior year balances.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-E-332 Building 801 - Renovations
Brookhaven National Laboratory
Upton, New York

TEC: $ 6,370
TPC: $ 6,420

Start Date: 2nd Qtr. FY 1997 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1996	800	800	610
1997	5,570	5,570	3,100
1998	0	0	2,660

3. Narrative: This project, in the west side of Building 801 (the Hot Lab), is part of a comprehensive effort to: upgrade the production of radionuclides and radiopharmaceuticals for supply to the pharmaceutical/medical community outside the laboratory; upgrade major research program leading to new and more effective diagnostic and therapeutic agents; comply with DOE Order 5820.2A, which requires that the generation of low-level radioactive waste be reduced; and bring Brookhaven National Laboratory (BNL) into conformance with federal, state, and local environmental laws and regulatory requirements. The unique location of BNL over an EPA designated "sole-source" aquifer has heightened regulatory concern over potential ground water contamination from BNL facilities.

Failure to fund this project would increase the potential for ground water contamination and non-compliance with safety regulations.

4. Total Project Funding (BA):

	Prior Years	FY 1996 Request	To Complete
Construction.....	$ 0	$ 800	$ 5,570
Capital Equipment.....	0	0	0
Operating Expenses.....	50	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location:

Project 96-E-331 Sanitary Sewer Restoration, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

TEC: $ 2,400
TPC: $ 2,415

Start Date: 3rd Qtr. FY 1997

Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1996	2,400	2,400	
1997	0	0	300
1998	0	0	1,200
			900

3. Narrative: Portions of the underground sanitary sewer system will be replaced based upon video camera surveys of site sanitary sewer lines, including approximately 3,480 feet of sanitary sewer lines ranging in diameter from three (3) inches to eight (8) inches. Soil samples will be tested during construction for possible contamination. All excavated material that is contaminated will be either remediated or removed to an authorized hazardous waste site.

Failure to fund this project would increase the potential for ground water contamination, excessive maintenance costs, and non-compliance with safety regulations.

4. Total Project Funding (BA):

	Prior Years	FY 1996 Request	To Complete
Construction.....	$ 0	$ 2,400	$ 0
Capital Equipment.....	0	0	0
Operating Expenses.....	15	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-E-330 Building Electrical Service Upgrade - Phase I
Argonne National Laboratory
Argonne, Illinois

TEC: $ 7,350
TPC: $ 7,430

Start Date: 2nd Qtr. FY 1997 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1996	1,200	1,200	1,000
1997	3,500	3,500	4,000
1998	2,650	2,650	2,350

3. Narrative: This project will provide the most urgently needed replacement of emergency generators and the upgrade of building's main electrical services (circuit breaker retrofits, bus duct replacement and emergency generator replacements) that are no longer adequate, reliable, efficient, or in accordance with existing electrical codes/standards and environment, safety and health standards.

Failure to fund this project will increase frequency and duration of general maintenance resulting in increased parts and labor costs, negative impact on scientific programs and non-compliance with safety regulations.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 0	$ 0	$ 1,200	$ 6,150
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	60	20	0	0	0

1124

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-309, Loss Prevention Upgrades - Electrical Substation
Brookhaven National Laboratory
Upton, New York

TEC: $ 6,970
TPC: $ 7,020

Start Date: 4th Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$ 600	$ 600	$ 315
1996	2,480	2,480	585
1997	3,890	3,890	3,499
1998	0	0	2,571

3. Narrative: This project provides for the upgrade of approximately 96 existing substations. With respect to fire protection, the project includes: relocating transformers; replacing oil-filled transformers with dry type; replacing oil-filled transformers with less flammable fluid; fire stand pipes and hose stations; fire deluge systems; dry chemical extinguishing systems; fire walls and barriers; wire glass; fire seals; relocating combustible materials and trailers; curbing; and oil retention pits. With respect to substation enclosures, work includes: extending existing fence to proper heights; new fence to replace deteriorating fence; new fence for relocated transformers; replacing fences at proper clearances; non-combustible door for vaults; panic hardware on vault doors; and protective screens. With respect to grounding, work includes: replacing deteriorating ground cable; new grounding for relocated substations; ground jumpers for gates; equipment grounds and reshaping arrestor grounding.

The purpose of this project is to minimize potential harmful situations to personnel and to minimize the potential loss of property and experimental program time due to fire. The sites' vulnerability was assessed as a result of Tiger Team findings.

4. Total Project Funding (B/A):

	Prior Years	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 600	$ 2,480	$ 3,890
Capital Equipment.....	0	0	0	0
Operating Expenses.....	50	0	0	0

1125

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-308, Sanitary System Modifications, Phase II — TEC: $ 3,532
Brookhaven National Laboratory — TPC: $ 3,772
Upton, New York

Start Date: 1st Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$ 960	$ 960	$ 700
1996	1,540	1,540	1,200
1997	1,032	1,032	1,300
1998	0	0	332

3. Narrative: This project is the second phase of the upgrade of the laboratory sanitary waste system. This project continues with replacement of the balance of defective sewer lines and implements treatment plant building improvements.

This phase will include: replacement of approximately 15,440 linear feet of defective sewer pipe; and demolishing the Hyperchlorite Building (No. 576), the Barminator Building (No. 583), and the Influent Measuring Building (No. 584), which are plywood structures. These structures will be replaced with masonry structures. Service Building (No. 575), which is a lunch and spare parts trailer, will be replaced with a masonry addition.

The purpose of this project is to eliminate or minimize present and future infiltration to groundwater and exfiltration to the sewage collection system, to replace structures not presently meeting OSHA and NEC Codes.

4. Total Project Funding (B/A):

	Prior Years	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 960	$ 1,540	$ 1,032
Capital Equipment.....	0	0	0	0
Operating Expenses.....	240	0	0	0

1126

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-307 Fire Safety Improvements, Phase III
Argonne National Laboratory
Argonne, Illinois

TEC: $ 2,880
TPC: $ 2,946

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

Fiscal Year	Appropriation	Obligations	Costs
1995	$ 210	$ 210	$ 170
1996	1,000	1,000	920
1997	1,000	1,000	840
1998	670	670	950

3. Narrative: This project encompasses the third phase of site wide fire safety modifications at ANL. This phase involves correction of "means of egress" deficiencies and fire separation/fire protection of building elements.

This project is proposed as part of ANL's 1991 Action Plan developed in response to DOE Tiger Team findings and is required to correct existing fire and life safety deficiencies.

4. Total Project Funding (B/A):

	Prior Years	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 0	$ 210	$ 1,000	$ 1,670
Capital Equipment.....	0	0	0	0
Operating Expenses.....	66	0	0	0

IV. B. Construction Funded Project Descriptive Summary

TEC: $ 4,720
TPC: $ 4,780

1. Project Title and Location: Project 93-E-324 Hazardous Materials Safeguards, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

Start Date: 3rd Qtr. FY 1994 Completion Date: 2nd Qtr. FY 1996

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 1,500	-1,000 a/	$ 500	$ 70
1994	1,000	- 30 b/	970	426
1995	1,962	0	1,962	1,970
1996	1,288	0	1,288	1,900
1997	0	0	0	354

a/ Application of a portion of the FY 1993 programmatic general reduction of $40,000,000.
b/ Reduction of $-30,000 for rescission.

3. Narrative: Project scope modified due to reduction of hazardous materials stored in Building 70. Reduction achieved through use of off-site storage. Modifications include: deletion of chemical delivery system; ventilation system upgrades; and central monitoring and alarm system. This project will upgrade Building 70 to add safety, health and environmental protection safeguards to meet or exceed current standards for public health and safety.

The existing Building 70 is an aged laboratory facility used for materials sciences and semi-conductor research. These operations employ a wide variety of chemicals which are highly flammable and/or toxic. If this project is not supported, research operations must be restricted, resulting in curtailing or eliminating fields of research at LBL.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 500	$ 970	$ 1,962	$ 1,288	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	60	0	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-E-323 Fire and Safety Systems Upgrade, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

TEC: $ 4,600
TPC: $ 4,630

Start Date: 2nd Qtr. FY 1994 Completion Date: 3rd Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 1,500	-1,000 a/	$ 500	$ 80
1994	1,000	- 30 b/	970	378
1995	2,000	0	2,000	1,200
1996	1,130	0	1,130	1,600
1997	0	0	0	1,342

a/ Application of a portion of the FY 1993 programmatic general reduction of $40,000,000.
b/ Reflects $-30,000 for rescission.

3. Narrative: Due to budgetary constraints, this project has been stretched out from the 3rd quarter of FY 1996 to the 3rd quarter FY 1997.

This project is the first of several which will bring LBL facilities into compliance with building, fire and life safety codes.

A majority of facilities at LBL were constructed from the 1940s to the mid 1960s. The facilities provided national scientific leadership during a historically significant time. Since this period, major changes have occurred in building, fire and life safety codes. This project will support modifications required to meet new codes and correct noncompliance conditions.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 500	$ 970	$ 2,000	$ 1,130	$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	30	0	0	0	0

1129

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-E-320, Fire and Safety Improvements - Phase II
Argonne National Laboratory
Argonne, Illinois

TEC: $ 5,350
TPC: $ 5,462

Start Date: 1st Qtr. FY 1994 Completion Date: 1st Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 1,870	-1,480 a/	$ 390	$ 122
1994	850	- 25 b/	825	600
1995	1,500	0	1,500	1,290
1996	2,411	0	2,411	1,900
1997	224	0	224	1,200
1998	0	0	0	238

a/ Application of a portion ($-1,020,000) of the FY 1993 programmatic general reduction of $40,000,000 and a reprogramming ($-460,000).
b/ Reflects $-25,000 for rescission.

3. Narrative: Start date changed from 4th quarter FY 1994 to 1st quarter FY 1994 to accommodate revised financial schedule and to optimize use of available funds. Completion date changed from 4th quarter FY 1996 to 1st quarter FY 1997 due to delay in availability of funds in FY 1993. This delay was the result of a programmatic general reduction and a reprogramming in FY 1993.

This project supports Phase II of required fire safety improvements at ANL and Phase II will complete upgrading of existing fire alarm and suppression systems and expand fire suppression systems to cover areas requiring protection.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction.....	$ 390	$ 825	$ 1,500	$ 2,411	$ 224
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	112	0	0	0	0

Other Energy Programs

DEPARTMENT OF ENERGY

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OTHER ENERGY PROGRAMS

VOLUME 2

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

TECHNOLOGY PARTNERSHIPS

The Department of Energy has an essential role to play in assisting U.S. economic competitiveness as a result of its unique laboratory system and research and development (R&D) capabilities. DOE has expertise in many areas that are critical to major high-technology industries and services and in reconciling economic and environmental goals. The Department's role in Industrial Competitiveness has evolved over time as a result of major legislation, including:

- Stevenson-Wydler Technology Innovation Act (P.L. 96-480) (1982)

- Small Business Innovative Development Act (P.L. 97-219)(1982)

- Federal Technology Transfer Act (P.L. 99-502)(1986)

- National Competitiveness Technology Transfer Act (P.L. 100-189)(1989)

- Energy Policy Act, Title XXX (P.L. 102-486) (1992)

- Small Business Technology Transfer Act (P.L. 102-564)(1992)

The Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness was formed in the Under Secretary's office to provide a corporate-level focus on the Department's vast and expanding array of partnerships with the private sector. The mission of the office is to exercise responsibility for department-wide integration, planning, and evaluation of partnerships between DOE and the private sector. The office plays a critical role in advancing and promoting technology partnerships involving resources of the Department and its laboratories and facilities. Toward this end, the office facilitates coordination and strategic planning of departmental programs, policies, and budgets to promote economic growth and job creation. The office also serves as the departmental focal point and facilitator for technology partnerships with industry and with other government agencies. Major activities of the office include:

- Management of the development of DOE's strategic plan for Industrial Competitiveness, including the selection of major partnerships, and their budget requirements;

- Serve as departmental focal point for technology partnership activities and policy issues with the Office of Management and Budget, the Office of Science and Technology Policy, other agencies, Congressional staff and outside groups;

- Analyses of domestic and international policy developments and issues affecting partnerships among the Department, industry and other partners;

- Coordination of department-wide activities to improve technology partnership processes and development of metrics and other information to assess the benefits resulting from DOE's technology partnerships; and

- Development and conduct of department-wide outreach, communication and training activities which provide the private sector with information about technology partnership opportunities within the Department.

In fulfilling its broad responsibilities, the Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness utilizes a core of highly trained and experienced staff supplemented by program teams under the Department's Technology Transfer Committee to address major crosscutting issues. Financial resources are required to enable the office to accomplish its objectives. In particular,

performance measurement efforts; outreach activities (such as publications, exhibit and conference participation); conducting training; policy assessments; and strategic planning activities (such as integrated planning with industry) typically require expenditure of funds as well as often requiring obtaining the services of experts not on staff.

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Technology Partnerships

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
Technology Partnerships	$0 a/	$0 a/	$0	$0 a/	$983
Program Direction	0 b/	0 b/	0	0 b/	2,170
TOTAL	$0	$0	$0	$0	$3,153
Staffing (FTEs)	b/	b/		b/	19

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977), Section 209

a/ Formerly funded as the Technology Utilization, a subprogram of the Laboratory Technology Transfer program, Office of Energy Research.
b/ Formerly funded in Advisory and Oversight Program Direction, Office of Energy Research.

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

SUMMARY OF CHANGES

Technology Partnerships

FY 1995 Appropriation	$ 0
- Adjustment	0
FY 1995 Adjusted	$ 0
- Support for Technology Partnerships program, previously funded as the Technology Utilization subprogram of the Technology Transfer program, at the FY 1995 level	+ 983
- Provides support for 19 FTE's previously funded in Advisory and Oversight Program Direction, Office of Energy Research	+ 2,170
FY 1996 Congressional Budget Request	$ 3,153

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY PARTNERSHIPS

I. Preface: Technology Partnerships

The Technology Partnerships program (formerly the Technology Utilization subprogram of the Energy Research Laboratory Technology Transfer program) is responsible for activities associated with the coordination, implementation and evaluation of the DOE's enhanced Technology Transfer program. As a voice for technology commercialization stakeholders, this program serves as an advocate for technology transfer both internal and external to the Department. Activities include:

- Providing analytical and other support to the activities of the Technology Transfer Committee (TTC) made up of representatives throughout the Department. The TTC is expected to further interprogram coordination through formation of a number of ad hoc and standing subcommittees and working groups. In addition to supporting the TTC, the Technology Partnerships program will also provide analytical and other support to the activities of a number of ad hoc task forces and working groups associated with Departmental technology transfer, commercialization and utilization activities.

- Providing analytical and other support as part of DOE's contribution to activities with other federal agencies, state and local governments, trade associations, universities, the Federal Laboratory Consortium and other relevant groups outside of DOE on technology transfer, commercialization and utilization activities.

- Development, in coordination with Program Secretarial Officers, of a Department-wide technology transfer education and training program, outreach activities and a performance measurement and reporting system.

- Performance of crosscutting technology and utilization studies and pilot activities.

II. A. Summary Table: Technology Partnerships

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Technology Partnerships	$ 0	$ 0	$ 983	$ 983
Total, Technology Partnerships	$ 0	$ 0	$ 983	$ 983

II. B. Laboratory and Facility Funding Table: Technology Partnerships

Argonne National Lab (East)	$ 0	$ 0	$ 50	$ 50
Brookhaven National Lab	0	0	50	50
Lawrence Berkeley Lab	0	0	50	50
Oak Ridge Institute for Science & Education	0	0	40	40
Pacific Northwest Lab	0	0	50	50
Sandia National Laboratories	0	0	50	50

II. B. Laboratory and Facility Funding Table: Technology Partnerships

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	0	0	693	693
Total, Technology Partnerships	$ 0	$ 0	$ 983	$ 983

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Technology Partnerships			
Technology Partnerships	All Technology Partnerships functions were included in the Technology Utilization subprogram of the Energy Research Laboratory Technology Transfer program in FY 1994. See separate budget for activities conducted in FY 1994.	All Technology Partnerships functions were included in the Technology Utilization subprogram of the Energy Research Laboratory Technology Transfer program in FY 1995. See separate budget for activities conducted in FY 1995.	Continue to develop master CRADAs for specific, identified, industry groups. Identify and perform analyses in support of the development of recommended policy solutions to potential and real barriers to technology transfer with targeted groups. Collect data, perform data validation and analysis, prepare and issue after approval of the Secretary the FY 1995 Annual Report to Congress on Technology Transfer Activities, Accomplishments and Plans. Continue to provide analytical and other support to several ongoing task force efforts, such as the machine tool industry working group, the intellectual property counsel staffing study and the ad hoc Classification Committee.

III. Technology Partnerships (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Partnerships (Cont'd)			Continue to provide analytical and other support to several interagency technology transfer efforts. Continue to provide analytical, logistical and other support to developing program linkages with other agencies on technology transfer. Continue the development, delivery, and evaluation of new, Department-wide specialized technology transfer courses for DOE and M&O contractor staff involved with technology transfer. EPACT: EPACT Section 2203(c) "Supporting Research and Technical Analysis" and Section 3001(e) "Research Development, Demonstration, and Commercial Application Activities": Collect data, review inputs, establish the content and publish Technology '95-'96. Collect data, review inputs, establish the content and publish the R&D 100 Award brochure. Funding in the amount of $20,000 and $1,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 0	$ 0	$ 983
Technology Partnerships	$ 0	$ 0	$ 983

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY PARTNERSHIPS

I. Preface: Program Direction

This subprogram provides the federal staffing resources and associated funding resources required to provide overall management, program direction, and support for the Department's activities associated with strategic planning, coordination, policy development, and issue resolution functions for industrial competitiveness.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 0	$ 0	$ 1,580	$ 1,580
Personnel Benefits	0	0	285	285
Travel	0	0	175	175
Contractual Services	0	0	130	130
Total, Program Direction	$ 0	$ 0	$ 2,170	$ 2,170

II. B. Laboratory and Facility Funding Table: Program Direction

All Other	$ 0	$ 0	$ 2,170	$ 2,170
Total, Program Direction	$ 0	$ 0	$ 2,170	$ 2,170

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Personnel Compensation	Program Direction funds were included in the Office of Energy Research Advisory and Oversight Program Direction in FY 1994. See separate budget for activities conducted in FY 1994.	Program Direction funds were included in the Office of Energy Research Advisory and Oversight Program Direction in FY 1995. See separate budget for activities conducted in FY 1995.	TRANSFER: Provide funds for personnel compensation for 19 full-time equivalents in the newly established Office of the Deputy Under Secretary for Technology Partnerships and Economic Competitiveness. Support coordination, implementation, and evaluation of DOE's Technology Transfer program. Provide analytical and other support to state and local governments, industry associations, colleges and universities, and other various groups associated with the technology transfer program, commercialization and utilization activities. Provide guidance to the Department-wide technology transfer education and training program outreach activities. Assist United States economic competitiveness through R&D partnerships with the private sector. Serve as DOE's liaison for each major partnership and a focal point with other Government agencies. Support the Energy Policy Act of 1992, including using joint ventures and extending DOE/industry cooperation to include commercial application. Support ongoing DOE task force efforts and interagency technology transfer efforts. Plan, organize, implement and evaluate a comprehensive DOE-wide outreach strategy. Measure performance and impacts of the transfer of the results of DOE's research activities to commercial use. Provide policy recommendations on the specific issues related to technology transfer with small business, as required by the Small Business Technology Transfer Act and the Defense Authorization Act for FY 1993. Plan, coordinate and support

III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)			the Technology Transfer Committee and its working groups and subcommittees.
	$ 0	$ 0	$ 1,580
Personnel Benefits	See Advisory and Oversight Program Direction.	See Advisory and Oversight Program Direction.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 0	$ 0	$ 285
Travel	See Advisory and Oversight Program Direction.	See Advisory and Oversight Program Direction.	Provide funds for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.
	$ 0	$ 0	$ 175
Contractual Services	See Advisory and Oversight Program Direction.	See Advisory and Oversight Program Direction.	Provide a variety of program support such as printing and editing, training and contractual services, including timesharing on various information systems and communication networks; and Automated Office Support Systems (AOSS) workstations.
	$ 0	$ 0	$ 130
Program Direction	$ 0	$ 0	$ 2,170

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OVERVIEW

Technical Information Management Program

The mission of the Technical Information Management Program is to provide direction and support to the Department of Energy in the management and dissemination of scientific and technical information resulting from Departmental programs; provide worldwide energy scientific and technical information to the Department of Energy, United States industry, academia, and the public; and fulfill international and interagency scientific and technical information commitments in support of Departmental and United States obligations.

The Office of Scientific and Technical Information, which reports to the Director of the Office of Science Education and Technical Information, is responsible for providing coordination and direction for the Department's Technical Information Management Program and for maintaining a centralized base of support to assist Departmental elements in planning, developing, and implementing scientific and technical information activities.

The Technical Information Management Program provides scientific and technical information management support to all Departmental elements. It is involved in meeting the nation's energy goals by assuring that scientific and technical information and related information resulting from the Department of Energy's programmatic efforts are effectively managed and are easily accessible to United States industry, educators, and the public in forms that facilitate responsiveness to customer needs. This approach assures that scientific and technical information is effectively provided to individuals who need it, thus facilitating accomplishment of Departmental goals related to energy efficiency, energy supplies, environmental protection and restoration, science and engineering research and education, and national competitiveness.

The strategic goals and objectives of the Technical Information Management Program are to:

- Provide a centralized management capability in the Department for the coordination of scientific and technical information policy, activities, and technical information standards to support Department of Energy programmatic needs.

- Acquire and manage a base of Department of Energy scientific, technical, and environmental information and other domestic and international information needed by the Department and its customers.

- Ensure the broad dissemination of or access to energy-related information while protecting national security and promoting United States competitiveness.

- Maximize the value of scientific and technical information by providing specialized information management support and services to the Department of Energy community.

- Negotiate and implement international information exchange agreements and represent the United States in international energy organizations to meet Department of Energy and United States commitments.

- Promote the transfer of technology to the U. S. commercial sector through information-sharing partnerships and access channels focused on globally competitive technologies.

The Technical Information Management Program is essential to the Department because it provides a centralized management focus for the policy, planning, development, and utilization of scientific and technical information in a highly diversified environment where scientific and technical information activities are continually carried out by various Department of Energy elements and their contractors. Other benefits of a centralized base of support to the Department include:

- Coordinated policy and standards for scientific and technical information management within the Department.

- Improved access to Department-sponsored research results generated over the last forty years.

- Economies of using centralized expertise and capabilities in support of a wide range of scientific and technical information activities, including acquisition, management, and dissemination through multi-media outlets.

- Specialized information management and dissemination assistance to other Departmental elements on a cost recovery basis in the range of $1.5 - 2.0 million per year.

- A source of both Departmental and non-Departmental generated energy-related information, for use by the Department, United States industry, and the public.

- The opportunity to participate with other countries and international organizations to ensure that the interests and needs of the Department are considered in energy-related scientific and technical information issues.

OUTPUT/OUTCOME MEASURES:

- Alliances are established with other Departmental organizations which leverage resources and improve Departmental service to specific customers.

- Public access mechanisms to scientific and technical information are established that are responsive to public needs.
- Evaluation systems are developed to measure Departmental performance in meeting customers' scientific and technical information needs.
- The integration of scientific and technical information goals and objectives into the Department's activities results in improved and more cost-effective information management and use within the Department.
- The availability of worldwide energy-related scientific and technical information is improved through international and interagency cooperation.
- Partnerships with the Government Printing Office, Nuclear Regulatory Commission, and with international organizations to ensure broad availability of worldwide information to the U. S. public, providing reimbursable funding of 1 to 1.5 million dollars.

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ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Technical Information Management Program

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses	$14,116	$14,535	$ -	$14,535	$15,350
Capital Equipment	582	589	-	589	600
Construction	0	1,000	-	1,000	1,500
Subtotal, Program	$14,698	$16,124	$ -	$16,124	$17,450
Adjustment	-114 a/	-171 a/	-	-171 a/	0
Total, Program	14,584	15,953	-	15,953	17,450
Staffing (FTEs)	164	169	0	169	167

Authorization: Section 31, P. L. 83-703

a/ Share of Energy Supply, Research and Development prior year balances assigned to this program.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands narrative in whole dollars)

SUMMARY OF CHANGES

Technical Information Management Program

FY 1995 Appropriation	$16,124
- Adjustment	-171
FY 1995 Adjusted	$15,953
- Transfer	0
FY 1995 Comparable	$15,953
- Public Access to Information	+ 635
- Build and Maintain Information Systems	+ 340
- Capital Equipment	+ 22
- Line-Item HVAC Construction Project - phase funding for FY 1996	+ 500
FY 1996 Congressional Budget Request	$17,450

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNICAL INFORMATION MANAGEMENT PROGRAM

I. Preface: Technical Information Management Program

The Technical Information Management Program represents a Department-wide approach to managing scientific and technical information and is carried out at many levels within the Department and by its contractors. Within the DOE infrastructure, the Office of Scientific and Technical Information is responsible for providing direction and leadership for the Department's Technical Information Management Program, and for furnishing a centralized base of support to assist Departmental elements in producing, managing, and disseminating their scientific and technical information, when such support is determined to be in the best economic and programmatic interests of the Department. To accomplish this role, the Office of Scientific and Technical Information performs a number of specific activities in support of five major Technical Information Management Program objectives:

- Providing a centralized management capability in the Department for the coordination of scientific and technical information policy, activities, and technical information standards to support Department of Energy programmatic needs.

- Acquiring and managing a base of DOE scientific, technical, and environmental information and other domestic and international information needed by the Department and its customers.

- Ensuring the broad dissemination of or access to energy-related information while protecting national security and promoting United States competitiveness.

- Maximizing the value of scientific and technical information by providing specialized information management support and services to the Department of Energy community.

- Negotiating and implementing international information exchange agreements and representing the United States in international energy organizations to meet Department of Energy and United States commitments.

II. A. Summary Table

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$14,002	$14,375	$15,350	$ + 975
Capital Equipment	582	578	600	+ 22
Construction	0	1,000	1,500	+ 500
Budget Authority	$14,584	$15,953	$17,450	$ + 1,497

B. Major Laboratory and Facility Funding

Oak Ridge National Laboratory	$ 5	$ 5	$ 0	$ - 5
Total Major Laboratory and Facility Funding	$ 5	$ 5	$ 0	$ - 5

III. Activity Descriptions

The following information management and dissemination activities promote industrial competitiveness, national security, environmental quality, technical competency in the work force, and adoption of energy efficient consumption habits.

- Partner with other federal agencies to implement the information "superhighway" in order to simplify the location and retrieval of worldwide scientific and technical information.

- Establish additional channels to DOE information to expand the knowledge base in U. S. industrial, educational, and public communities.

- Develop information management models and coordinate "best business" information policies and practices to help Departmental elements track and evaluate their programs and to increase the return on DOE's R&D and environment-related investments.

- Continue environment, safety, and health improvements in the Department's Office of Scientific and Technical Information facility for the protection of its historic and current technical information resources.

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses			
Program Direction			
	Funding by Object Class:		
	Personnel		
	Compensation $ 7,526	$ 8,080	$8,515
	Benefits 1,319	1,415	1,490
	Travel 175	185	185
	Contractual Services 1,185	1,020	1,050
	$10,205	$10,700	$11,240
	Provides for FTEs and facility services required to implement and operate the Technical Information Management Program, including: collecting, organizing, analyzing, and disseminating R&D results; managing DOE's Master file of worldwide energy information; designing, developing, and operating systems to control dissemination of classified and sensitive information; maintaining a database on energy-related research in progress; providing guidance, assistance, and support to DOE program managers in managing, controlling, and disseminating their scientific and technical information; recommending and participating in the development of policy, standards, and procedures for DOE's STI program; negotiating and implementing bilateral and multilateral agreements	Continues to provide FTEs and facility services required to implement and operate the Technical Information Management Program. 169 FTE ($10,700)	Continues to provide FTEs and facility services required to implement and operate the Technical Information Management Program. 167 FTE ($11,240)

1150

(Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
	for domestic and international exchange of energy information; monitoring receipt of information deliverables from DOE-funded R&D contracts; and providing tools to assist in controlling the flow of information abroad. 164 FTE ($10,205)		
Acquisition and Appraisal	Provides for contract services to acquire and evaluate scientific and technical information which is made available to DOE scientists and engineers, and to meet requirements of certain international exchange agreements. ($1,000)	Provides for contract services to acquire and evaluate scientific and technical information which is made available to DOE scientists and engineers, and to meet requirements of certain international exchange agreements. ($1,100)	Provides for contract services to acquire and evaluate scientific and technical information which is made available to DOE scientists and engineers, and to meet requirements of certain international exchange agreements. ($1,100)
Systems and Technology	Provides for contract services required to develop, build, and maintain information systems and to manage and provide automated access to scientific and technical information. ($2,000)	Provides for contract services required to develop, build, and maintain information systems and to manage and provide automated access to scientific and technical information. ($1,900)	Provides for contract services required to develop, build, and maintain information systems and to manage and provide automated access to scientific and technical information. ($2,100)

III. Operating Expenses
(Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996
Products and Services	Provides for contractor production support services and supplies required to produce and make available the results of DOE's energy research and development program in appropriate forms and media. ($797)	Provides for contractor production support services and supplies required to produce and make available the results of DOE's energy research and development program in appropriate forms and media. ($675)	Provides for contractor production support services and supplies required to produce and make available the results of DOE's energy research and development program in appropriate forms and media. ($910)
Subtotal Operating Expenses	$14,002	$14,375	$15,350
Capital Equipment	Provides for ADP and duplicating equipment to support DOE's centralized technical information activities. ($582)	Provides for ADP and duplicating equipment to support DOE's centralized technical information activities. ($578)	Provides for same level of equipment. ($600)
Subtotal Capital Equipment	$ 582	$ 578	$ 600
Construction	No activity. ($0)	Provides for a line-item construction project to correct friable asbestos problems identified in the recent OSTI 5-Year Safety and Health Plan. Outyears provide funding to update and renovate the HVAC systems. ($1,000)	Continues the phase funding for the line-item construction project for HVAC Upgrades. ($1,500)
Subtotal Construction	$ 0	$ 1,000	$ 1,500
Total	$14,584	$15,953	$17,450
FTEs	164	169	167

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin)

TECHNICAL INFORMATION MANAGEMENT PROGRAM
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	FY 1997 Request	Unappropriated Balance
95-A-500	Heating, Venting, and Air Conditioning (HVAC) Retrofits	$4,000	------	------	$1,000	$1,500	$1,500	$3,000
Total, Construction		$4,000	------	------	$1,000	$1,500	$1,500	$3,000

IV. B. Construction Funded Project Description Summary

1. Project Title and Location:

Project 95-A-500, Heating, Venting, and Air Conditioning (HVAC) Retrofit; Oak Ridge, TN

TEC $4,000

TPC $4,000

Start Date: 2nd Qtr. FY 1995

Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 1,000	$ 0	$ 800	$ 100
1996	1,500	0	1,700	2,200
1997	1,500	0	1,500	1,700

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

POLICY AND MANAGEMENT - ER

This program provides the staffing resources and associated funding required to provide overall direction of the Office of Energy Research responsibilities carried out under the following programs: High Energy Physics, Nuclear Physics, Biological and Environmental Research, Fusion Energy, Basic Energy Sciences, Energy Research Analyses, Multiprogram Energy Laboratories-Facilities Support, ER Laboratory Technology Transfer, and the DOE-wide Small Business Innovation Research and Small Business Technology Transfer Programs. This staff has also provided program management direction for the Superconducting Super Collider and is continuing to provide liaison with other DOE offices to terminate the project.

In addition to directing the Office's research programs, the Director of Energy Research also serves as the Department's science and technology advisor for formulation and implementation of basic research policy. In this capacity, the Director provides independent reviews, analyses and recommendations concerning a wide range of activities which require scientific counsel. These activities include national research and development strategies, plans and policies, including the establishment of budgetary priorities for energy research and development programs and advising on policy issues regarding the best utilization of the DOE multiprogram laboratories.

Performance indicators are: efficiency and effectiveness of administrative operations, and effectiveness in support of departmental plans and operations.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Policy and Management – Energy Research

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Policy and Management					
Operating Expenses	$3,137	$2,200	$0	$2,200	$2,200
Total Program	$3,137 a/	$2,200	$0	$2,200	$2,200
Summary					
Operating Expenses	$3,137	$2,200	$0	$2,200	$2,200
Total Program	$3,137	$2,200	$0	$2,200	$2,200
Staffing (FTEs)	15	18 b/	0	18	18

Authorization: Section 209, P.L. 95-91, "Department of Energy Organization Act."

a/ Included funding for 22 FTEs which were redistributed as a result of departmental realignment.
b/ Revised request.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Policy and Management - Energy Research

FY 1995 Appropriation	$ 2,200
- Adjustment	0
FY 1995 Adjusted	2,200
Personnel Compensation - provides for increased personnel compensation as a request of normal within-grade increases and pay raises	+ 9
Personnel Benefits - provides for increased benefits rate as turnover occurs	+ 3
Other Services - reflects reduction in accordance with Administration initiatives	- 12
FY 1996 Congressional Budget Request	$ 2,200

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

POLICY AND MANAGEMENT - ER

I. Preface: Policy and Management - ER

This program provides the staffing resources and associated costs of the Immediate Office of the Director of Energy Research, which is required to provide overall direction of the Office of Energy Research responsibilities carried out under the following programs: High Energy Physics, Nuclear Physics, Biological and Environmental Research, Fusion Energy, Basic Energy Sciences, Energy Research Analyses, Multiprogram Energy Laboratories-Facilities Support, ER Laboratory Technology Transfer, and the DOE-wide Small Business Innovation Research and Small Business Technology Transfer Programs. This staff has also provided program management direction for the Superconducting Super Collider and is continuing to provide liaison with other DOE offices to terminate the project. Performance indicators are: efficiency and effectiveness of administrative operations, and effectiveness in support of Departmental plans and operations.

II. A. Summary Table: Policy and Management - ER

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 1,387	$ 1,413	$ 1,422	$ 9
Personnel Benefits	248	265	268	3
Travel	220	175	175	0
Contractual Services	1,282	347	335	-12
Total, Policy and Management - ER	$ 3,137	$ 2,200	$ 2,200	$ 0

II. B. Laboratory and Facility Funding Table: Policy and Management - ER

All Other	$ 3,137	$ 2,200	$ 2,200	$ 0
Total, Policy and Management - ER	$ 3,137	$ 2,200	$ 2,200	$ 0

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Policy and Management - ER			
Personnel Compensation	Provided funds for personnel compensation for 15 full-time equivalents (FTEs) in the Office of the Director of Energy Research. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.	Provide funds for personnel compensation for 18 FTEs in the Office of the Director of Energy Research. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.	Provide funds for personnel compensation for 18 FTEs in the Office of the Director of Energy Research. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.
	Provided staff for overall direction and management of the Office's research programs, the Director's responsibilities for advising the Secretary, and support of the Chief of Staff activities. Carried out increased initiatives in total quality management.	Continue to provide staff for overall direction and management of the Office's research programs and the Director's responsibilities for advising the Secretary on science and technology policies, responding to requests for special analyses from the DOE front office, and support of the Chief of Staff.	Continue to provide staff for overall direction and management of the Office's research programs and the Director's responsibilities for advising the Secretary on science and technology policies, responding to requests for special analyses from the DOE front office, and support of the Chief of Staff.
	$ 1,387	$ 1,413	$ 1,422
Personnel Benefits	Funded civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 248	$ 265	$ 268
Travel	Provided funds for official domestic, international, and local travel. Funded transferee/new hire personnel for permanent change of station transportation.	Provide funds at a reduced level for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.	Provide funds at a reduced level for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.
	$ 220	$ 175	$ 175

III. Policy and Management - ER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Contractual Services	Provided a variety of program support to improve organizational development and program administration, institute total quality management principles, support Automated Support Systems (AOSS) workstations, and provide for training and support costs of ER employees.	Continue to provide for training, AOSS workstations, and other support costs of ER employees at a reduced level.	Continue to provide for training, AOSS workstations, and other support costs of ER employees at a reduced level.
	$ 1,282	$ 347	$ 335
Policy and Management - ER	$ 3,137	$ 2,200	$ 2,200

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

POLICY AND MANAGEMENT

I. Preface: Policy and Management - NE

The Policy and Management activity includes the staff and funding required by the Office of Nuclear Energy to carry out the functions of program planning, resource management, and to manage the DOE portion of the high priority U.S. Government program which provides reactor safety assistance to Russia, Ukraine, and the Central and Eastern European countries. (Through FY 1995, DOE will manage about $200 million from other Federal agencies). This activity also includes funding for Departmental initiatives, such as, support for Historically Black Colleges and Universities, Nuclear Engineering and Health Physics Fellowship Program; and public information activities. Computer support, as well as hardware and software acquisitions, modifications, and other telecommunications services for work stations. Continuation of this support is essential to the effective operation of Nuclear Energy's telecommunication and word processing system.

II. A. Summary Table: Policy and Management - NE

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 3,955	$ 4,680	$ 4,780	$ 100
Benefits	685	835	845	10
Travel	481	370	370	0
Other Expenses	6,168	6,015	4,205	-1,810
Capital Equipment	0	0	0	0
Total, Policy and Management - NE	$ 11,289	$ 11,900	$ 10,200	$ -1,700

II. B. Laboratory and Facility Funding Table: Policy and Management - NE

Argonne National Lab (East)	$ 385	$ 235	$ 235	$ 0
Chicago Operations Office	304	330	330	0
Idaho National Engineering Lab	549	0	0	0
Lawrence Livermore National Lab	170	0	0	0
Los Alamos National Laboratory	100	100	100	0
Oak Ridge Institute for Science & Education	436	975	975	0
Oak Ridge National Lab	638	500	500	0
Pacific Northwest Lab	350	350	350	0
Sandia National Laboratories	120	0	0	0
Washington Headquarters	8,237	9,410	7,710	-1,700
Total, Policy and Management - NE	$ 11,289	$ 11,900	$ 10,200	$ -1,700

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Policy and Management - NE			
Personnel Compensation	This activity includes salaries and awards for staff assigned to the Office of Nuclear Energy organization. 60.0 FTE $ 3,955	This activity includes salaries and awards for staff assigned to the Office of Nuclear Energy organization. 67.0 FTE $ 4,680	This activity includes salaries and awards for staff assigned to the Office of Nuclear Energy organization. 67.0 FTE $ 4,780
Benefits	This activity includes Civil Service Retirement System (CSRS) employee's personnel benefits and Federal Employee Retirement System (FERS) employee's personnel benefits. $ 685	This activity includes Civil Service Retirement System (CSRS) employee's personnel benefits and Federal Employee Retirement System (FERS) employee's personnel benefits. $ 835	This activity includes Civil Service Retirement System (CSRS) employee's personnel benefits and Federal Employee Retirement System (FERS) employee's personnel benefits. $ 845
Travel	This activity includes funds for official business travel, invitational travel and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters and other allowable relocation expenses. $ 481	This activity includes funds for official business travel, invitational travel and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters and other allowable relocation expenses. $ 370	This activity includes funds for official business travel, invitational travel and permanent change of station travel which includes employee and family transportation, per diem, temporary quarters and other allowable relocation expenses. $ 370
Other Expenses	This activity includes funds for international collaboration, including Russian, Ukrainian, and Central and Eastern European reactor safety initiatives; computer support, including work station support from the Information Technology Support Office in hardware acquisitions and modifications and software acquisitions; university activities; public information activities; as well as contractor technical, and quality assurance support services ($5,943).	This activity includes funds for international collaboration, including Russian, Ukrainian, and Central and Eastern European reactor safety initiatives; computer support, including work station support from the Information Technology Support Office in hardware acquisitions and modifications and software acquisitions; university activities; public information activities; as well as contractor technical, and quality assurance support services ($6,015).	This activity includes funds for international collaboration, including Russian, Ukrainian, and Central and Eastern European reactor safety initiatives; computer support, including work station support from the Information Technology Support Office in hardware acquisitions and modifications and software acquisitions; university activities; public information activities; as well as contractor technical, and quality assurance support services ($4,410).

III. Policy and Management - NE (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Expenses (Cont'd)	$ 6,168	$ 6,015	$ 4,205
Capital Equipment	No Activity.	No Activity.	No Activity.
	$ 0	$ 0	$ 0
Policy and Management - NE	60.0 FTE $ 11,289	67.0 FTE $ 11,900	67.0 FTE $ 10,200

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Policy and Management - ESR&D

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Policy and Management - ESR&D					
Operating Expenses	$ 3,763	$ 4,817	$ 0	$ 4,817	$ 4,817
Subtotal, Policy and Management - ESR&D	$ 3,763 a/	$ 4,817	$ 0	$ 4,817	$ 4,817
Adjustment	0	0	0	0	-71 b/
TOTAL	$ 3,763	$ 4,817	$ 0	$ 4,817	$ 4,746
Summary					
Operating Expenses	$ 3,763	$ 4,817	$ 0	$ 4,817	$ 4,817
Total Program	$ 3,763	$ 4,817	$ 0	$ 4,817	$ 4,817
Staffing (FTEs)	31	31	0	31	31

Authorizations:
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 102-486, "Energy Policy Act of 1992"

a/ Reflects adjustments to Conference Mark of $-115 for the FY 1994 Recission, P.L. 103-211.
b/ In support of DOE efforts for prudent management of financial resources, the Office of Energy Efficiency and Renewable Energy is conducting a detailed review of uncosted balances. This is in accordance with the Departmental objective of reducing excessive uncosted balances. Estimates of approximately $6 million have been identified and the savings have been applied pro-rata as an offset to the FY 1996 budget. Once the review is completed, adjustments will be made to reflect actual savings. Pro-rata amount for Policy and Management is $-71.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Policy and Management - ESR&D

FY 1995 Appropriation	$ 4,817
- Adjustment -	0
FY 1995 Adjusted	$ 4,817
- Transfer -	0
FY 1995 Comparable	$ 4,817

Policy and Management - ESR&D

- Salaries and Related Expenses - Energy Supply R&D - Energy Supply R&D	0
- Management - Management	0
- Analysis, Evaluation and Planning - Analysis, Evaluation and Planning	0
Subtotal, Policy and Management (ESR&D)	$ 4,817
Adjustment	$ -71
FY 1996 Congressional Budget Request	$ 4,746

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

POLICY AND MANAGEMENT - ESR&D

I. Preface: Policy and Management - ESR&D

This activity supports the Office of the Assistant Secretary for Energy Efficiency and Renewable Energy (EE). It formulates energy policies and plans; implements an integrated, comprehensive mix of energy efficiency and renewable energy programs which impact all end-use sectors; and interprets and implements legislation mandated by the President and enacted by Congress. Policy and Management also serves as a focal point to help ensure that energy efficiency and renewable energy programs adhere to United States energy policy and national objectives as articulated by the National Technology Initiative, Office of Science and Technology Policy Initiatives, and the Energy Policy Act of 1992 (EPACT). Staffing resources and associated funding are required for the overall direction of EE responsibilities carried out under the other specific programs as follows: Industrial Technologies, Building Technologies, Transportation Technologies, Utility Technologies, and Technical and Financial Assistance.

EE Policy and Management also sets the planning framework and standard methods, procedures, and assumptions for each program sector's planning; assesses the strategic factors and analyzes trans-sector trends, issue impacts, and opportunities; and monitors and assesses technology developments, market penetration, and policies external to EE that impact EE programs. This effort coordinates and tracks all EPACT activities and integrates all EPACT 5-year plans. This effort seeks to provide consistent planning and evaluation procedures across EE, allowing effective project prioritization across sectors and for background evaluations to determine appropriate EE activities, such that markets are free to make optimum economic and environmental investment decisions by considering both supply and demand options and ensuring that the fullest possible set of inexpensive energy supply and demand options are available. The activities will initiate work on performance-based planning and budgeting to begin implementation of the Government Performance and Results Act of 1993 (P.L. 103-62).

Streamlining and Restructuring Initiatives:

In support of the National Performance Review (NPR) recommendations, the Office of Energy Efficiency and Renewable Energy (EE) has developed a comprehensive Streamlining Plan. The Plan assumes no growth in FTEs beyond the 1995 level despite program expansions. Thus, the Plan provides an aggressive streamlining program to make the most effective use of existing staff, including increasing supervisory span of control, shifting resources to the field, and increasing diversity. EE's strategy is to expand the role of its field organizations, shift resources to directly support the program mission, and reduce unneeded Headquarters staff positions. For example, EE has already improved its span of control significantly, from 1:4 in FY 1993 to 1:6 in FY 1994, and EE's ratio will increase further when a significant number of existing non supervisory vacancies are filled. EE plans to meet the Secretary's FY 1995 year-end goal of 1:10 and continually improve in the following years.

EE is also in the process of addressing NRP reductions in targeted positions. It is anticipated that a reduction of at least 25 percent will be achieved through the next five fiscal years. EE has also established crosscutting and flexible inter-office matrix teams which will ensure that customer needs are met in the most effective manner and that program delivery is not impacted.

II. A. Summary Table: Policy and Management - ESR&D

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Salaries and Contractual Services				
Salaries and Related Expenses - Energy Supply R&D	$ 1,965	$ 2,184	$ 2,184	$ 0
Subtotal, Salaries and Contractual Services	$ 1,965	$ 2,184	$ 2,184	$ 0
Contractual Services				
Management	$ 899	$ 878	$ 878	$ 0
Analysis, Evaluation and Planning	899	1,755	1,755	0
Subtotal, Contractual Services	$ 1,798	$ 2,633	$ 2,633	$ 0
Total, Policy and Management - ESR&D	$ 3,763	$ 4,817	$ 4,817	$ 0

II. B. Laboratory and Facility Funding Table: Policy and Management - ESR&D

All Other	$ 3,763	$ 4,817	$ 4,817	$ 0
Total, Policy and Management - ESR&D	$ 3,763	$ 4,817	$ 4,817	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Policy and Management - ESR&D			
Salaries and Contractual Services			
Salaries and Related Expenses - Energy Supply R&D	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $1,662 12.1 Civilian personnel benefits $ 283 21.0 Travel and transportation of persons $ 20 25.2 Other services $1,798 Provide overall management guidance to Energy Efficiency and Renewable Energy (EE) programs. Support 31 FTEs for liaison with senior officials in DOE, Congress, the White House, OMB, and other agencies, as well as State and local governments. Provide analyses of EE programs needed to assess performance and effectiveness and formulate policy and program objectives and alternative program strategies. ($1,965)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $1,841 12.1 Civilian personnel benefits $ 315 21.0 Travel and transportation of persons $ 28 25.2 Other services $2,633 Provide overall management guidance to Energy Efficiency and Renewable Energy (EE) programs. Support 31 FTEs for liaison with senior officials in DOE, Congress, the White House, OMB, and other agencies, as well as State and local governments. Provide analyses of EE programs needed to assess performance and effectiveness and formulate policy and program objectives and alternative program strategies. ($2,184)	The following is a breakdown of the funding by Object Class: 11.9 Personnel compensation $1,846 12.1 Civilian personnel benefits $ 316 21.0 Travel and transportation of persons $ 22 25.2 Other services $2,633 Provide overall management guidance to Energy Efficiency and Renewable Energy (EE) programs. Support 31 FTEs for liaison with senior officials in DOE, Congress, the White House, OMB, and other agencies, as well as State and local governments. Provide analyses of EE programs needed to assess performance and effectiveness and formulate policy and program objectives and alternative program strategies. ($2,184)
	31.0 FTE $1,965	31.0 FTE $2,184	31.0 FTE $2,184
Subtotal, Salaries and Contractual Services	31.0 FTE $1,965	31.0 FTE $2,184	31.0 FTE $2,184

III. Policy and Management - ESR&D (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Contractual Services			
Management	Provide contract support to assist in cross-cutting EE-wide program development, review and evaluation activities, budget formulation and execution, personnel management, and administrative support for all EE program offices. Support computer and administrative costs. ($899)	Provide contract support to assist in cross-cutting EE-wide program development, review and evaluation activities, performance-based planning activities, budget formulation and execution, personnel management, and administrative support for all EE program offices. Support computer and administrative costs. ($878)	Provide contract support to assist in cross-cutting EE-wide program development, review and evaluation activities, performance-based planning activities, budget formulation and execution, personnel management, and administrative support for all EE program offices. Support computer and administrative costs. ($878)
	$899	$878	$878
Analysis, Evaluation and Planning	Supports planning and analytical activities managed by the Office of Planning and Assessment to ensure rigorous and consistent planning across program offices. Principal activities include: development of strategic plans that incorporate rigorous analysis and close involvement of private industry and other stakeholders; conduct of value-based planning; rigorous ongoing program evaluation; total energy cycle analysis of key EE technologies; rigorous market assessments to help set R&D directions and facilitate technology transfer; and collaborative analysis with key market stakeholders to identify opportunities to increase economic productivity, environmental quality and energy security to energy efficiency and renewable energy technologies. ($899)	Supports planning and analytical activities managed by the Office of Planning and Assessment to ensure rigorous and consistent planning across program offices. Principal activities include: development of strategic plans that incorporate rigorous analysis and close involvement of private industry and other stakeholders; conduct of value-based planning; initiation of performance-based planning and budgeting activities as required by the Government Performance and Results Act of 1993 (P.L. 103-62); rigorous ongoing program evaluation; total energy cycle analysis of key EE technologies; rigorous market assessments to help set R&D directions and facilitate technology transfer; and collaborative analysis with key market stakeholders to identify opportunities to increase economic productivity, environmental quality and energy security to energy efficiency and renewable energy technologies; coordinate and manage all Energy Policy Act activities; prepare all renewables cross-cutting EPAct program and management plans; and	Supports planning and analytical activities managed by the Office of Planning and Assessment to ensure rigorous and consistent planning across program offices. Principal activities include: development of strategic plans that incorporate rigorous analysis and close involvement of private industry and other stakeholders; conduct of value-based planning; initiation of performance-based planning and budgeting activities as required by the Government Performance and Results Act of 1993 (P.L. 103-62); rigorous ongoing program evaluation; total energy cycle analysis of key EE technologies; rigorous market assessments to help set R&D directions and facilitate technology transfer; and collaborative analysis with key market stakeholders to identify opportunities to increase economic productivity, environmental quality and energy security to energy efficiency and renewable energy technologies; coordinate and manage all Energy Policy Act activities; prepare all renewables cross-cutting EPAct program and management plans; and

III. Policy and Management - ESR&D (Cont'd):
Contractual Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analysis, Evaluation and Planning (Cont'd)		support EE activities for Total Quality Management initiatives. ($1,755)	support EE activities for Total Quality Management initiatives. ($1,755)
	$899	$1,755	$1,755
Subtotal, Contractual Services	$1,798	$2,633	$2,633
Policy and Management - ESR&D	31.0 FTE $3,763	31.0 FTE $4,817	31.0 FTE $4,817

Environmental Management

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BUDGET JUSTIFICATION AND SUPPORTING MATERIALS FOR THIS ACTIVITY ARE CONTAINED IN A SEPARATE VOLUME

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FY 1996 Congressional Budget Request

General Science and Research
Uranium Supply Enrichment Activities
Isotope Production and Distribution
Nuclear Waste Disposal Fund
Power Marketing Administrations
Departmental Administration
Inspector General

Chief Financial Officer

February 1995

Volume 3

Department of Energy

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES
ISOTOPE PRODUCTION AND DISTRIBUTION
NUCLEAR WASTE DISPOSAL FUND
POWER MARKETING ADMINISTRATIONS
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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Energy and Water Development Subcommittees:					
Energy Supply Research and Development	3,175.2	3,160.0	3,314.6	3,314.6	3,396.5
Uranium Supply and Enrichment Activities	135.1	135.1	73.2	73.2	42.3
UE Decontamination & Decommissioning Fund	286.3	286.3	301.3	301.3	288.8
General Science and Research Activities	1,604.5	1,604.5	984.0	984.0	1,017.5
Isotope Production and Distribution Fund	4.9	4.9	—	—	—
Atomic Energy Defense Activities:					
Weapons Activities	3,630.2	3,294.3	3,229.1	3,240.2	3,540.2
Defense Environmental Restoration & Waste Mgmt	5,170.1	6,065.0	5,092.7	5,605.0	6,008.0
Materials Support & Other Defense Programs	1,960.4	1,401.3	1,849.7	1,326.3	1,432.2
Defense Nuclear Waste Disposal	120.0	120.0	129.4	129.4	198.4
Total, Atomic Energy Defense Activities	10,880.7	10,880.6	10,300.9	10,300.9	11,178.8
Departmental Administration	289.2	304.5	281.6	281.6	317.1
Office of Inspector General	30.4	30.4	26.5	26.5	31.0
Power Marketing Administration:					
Alaska Power Administration	4.0	4.0	6.5	6.5	4.3
Bonneville Power Administration (non-add)	(50.0)	(50.0)	(147.3)	(147.3)	(-200.0)
Conservation Direct Loan Financing Account (non-add)	—	—	—	—	(26.6)
Southeastern Power Administration	29.8	29.8	22.4	22.4	19.8
Southwestern Power Administration	33.6	33.6	21.3	21.3	29.8
Western Area Power Administration	285.1	285.1	229.8	229.8	310.9
Falcon & Amistad Operating & Maintenance Fund	—	—	—	—	1.0
Colorado River Basin	—	—	—	—	-10.0
Total, Power Marketing Administrations	352.5	352.5	280.0	280.0	355.8
Federal Energy Regulatory Commission	—	—	—	—	—
Nuclear Waste Disposal Fund	260.0	260.0	392.8	392.8	—
Geothermal Resources Development Fund	-4.5	-4.5	—	—	—
Total, Appropriations Before the Energy and Water Development Subcommittees	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Interior and Related Agencies Subcommittees:					
Fossil Energy Research and Development	426.0	426.0	441.8	441.8	436.5
Alternative Fuels Production	-4.8	-4.8	-3.9	-3.9	-2.4
Naval Petroleum and Oil Shale Reserves	214.8	214.8	187.1	187.1	101.0
Energy Conservation	669.1	669.1	770.8	770.8	890.5
Economic Regulation Administration	13.0	13.0	12.4	12.4	10.5
Emergency Preparedness	8.9	8.9	8.2	8.2	8.2
Strategic Petroleum Reserve	206.8	206.8	243.7	243.7	212.7
Strategic Petroleum Account	—	—	-107.8	-107.8	-187.0
SPR Decommissioning Fund	—	—	—	—	100.0
Proceeds from sale of Weeks Island Oil	—	—	—	—	-100.0
Energy Information Administration	86.6	86.6	84.6	84.6	84.7
Clean Coal Technology	221.5	221.5	37.1	37.1	45.0
Total, Appropriations Before the Interior and Related Agencies Subcommittees	1,841.9	1,841.9	1,674.0	1,674.0	1,599.7
Energy and Water Development appropriations	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8
Payment to States (non-add)	(2.5)	(2.5)	(2.5)	(2.5)	(2.5)
Uranium Enrichment D&D Fund Discretionary Payments	-129.8	-129.8	-133.7	-133.7	-395.0
Total, Department of Energy Appropriations	18,726.4	18,726.4	17,495.2	17,495.2	17,832.6

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL STAFFING REQUEST

	FY 1994 ACTUAL USAGE	FY 95 MINUS FY 94	FY 1995 ESTIMATE	FY 96 MINUS FY 95	FY 1996 REQUEST
ENERGY and WATER SUBCOMMITTEE					
HEADQUARTERS	6,709	260	6,969	388	7,357
FIELD	10,898	504	11,402	−162	11,240
SUBCOMMITTEE TOTAL	17,607	764	18,371	226	18,597
INTERIOR SUBCOMMITTEE					
HEADQUARTERS	1,337	92	1,429	−25	1,404
FIELD	894	−45	849	−11	838
SUBCOMMITTEE TOTAL	2,231	47	2,278	−36	2,242
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

DEPARTMENT OF ENERGY FY 1996 CONGRESSIONAL STAFFING REQUEST

APPROPRIATION	FY 1994 USAGE	FY 1995 – FY 1994	FY 1995 ESTIMATE	FY 1996 – FY 1995	FY 1996 REQUEST
ENERGY SUPPLY R&D	1,290	35	1,325	23	1,348
HEADQUARTERS	1,118	18	1,136	23	1,159
FIELD	172	17	189	0	189
URANIUM ENRICHMENT	66	−21	45	9	54
HEADQUARTERS	33	−23	10	9	19
FIELD	33	2	35	0	35
ISOTOPE PRODUCTION & DIST	6	0	6	6	12
GENERAL SCIENCE & RESEARCH	148	−7	141	−33	108
HEADQUARTERS	87	−28	59	−3	56
FIELD	61	21	82	−30	52
WEAPONS ACTIVITIES	2,316	−144	2,172	58	2,230
HEADQUARTERS	324	−49	275	111	386
FIELD	1,992	−95	1,897	−53	1,844
ENVIRONMENTAL REST & WASTE MGT	2,067	1133	3,200	716	3,916
HEADQUARTERS	833	324	957	277	1,234
FIELD	1,434	809	2,243	439	2,682
MATERIALS SUPPORT	1,266	−99	1,167	−453	714
HEADQUARTERS	604	−57	547	−64	483
FIELD	662	−42	620	−389	231
DEPARTMENTAL ADMINISTRATION	3,034	35	3,069	−2	3,067
HEADQUARTERS	1,873	47	1,920	4	1,924
FIELD	1,161	−12	1,149	−6	1,143
INSPECTOR GENERAL	358	−2	356	0	356
ALASKA POWER ADMIN	33	2	35	0	35
BONNEVILLE POWER ADMIN	3,596	−156	3,440	−115	3,325
SOUTHEASTERN POWER ADMIN	42	−1	41	0	41
SOUTHWESTERN POWER ADMIN	198	−2	196	−1	195
WAPA – OPERATION & MAINT	1,281	−23	1,258	−6	1,252
WAPA – COLORADO RIVER BASIN	223	−14	209	−1	208
FED ENERGY REGULATORY COMM	1,434	29	1,463	−10	1,453
NUCLEAR WASTE FUND	249	−1	248	35	283
HEADQUARTERS	239	1	240	35	275
FIELD	10	−2	8	0	8
CLEAN COAL TECHNOLOGY	85	1	86	−10	76
HEADQUARTERS	22	2	24	−1	23
FIELD	63	−1	62	−9	53
FOSSIL ENERGY R&D	751	−25	726	0	726
HEADQUARTERS	151	0	151	1	152
FIELD	600	−25	575	−1	574
NAVAL PET & OIL SHALE RES	84	−8	76	0	76
HEADQUARTERS	18	1	19	0	19
FIELD	66	−9	57	0	57
ENERGY CONSERVATION	487	57	544	0	544
HEADQUARTERS	448	71	519	0	519
FIELD	39	−14	25	0	25
EMERGENCY PREPAREDNESS	65	2	67	−1	66
ECONOMIC REGULATION	135	−5	130	−20	110
STRATEGIC PETROL RESERVE	164	2	166	−1	165
HEADQUARTERS	38	−2	36	0	36
FIELD	126	4	130	−1	129
ENERGY INFORMATION ACTIVITIES	460	23	483	−4	479
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

General Science and Research

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FY 1996 CONGRESSIONAL BUDGET REQUEST

GENERAL SCIENCE AND RESEARCH

VOLUME 3

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
General Science and Research Activities					
High Energy Physics	610.2	610.2	642.1	642.1	685.5
Nuclear Physics	345.3	345.3	331.5	331.5	321.1
General Science Program Direction	9.0	9.0	10.4	10.4	10.9
Superconducting Super Collider Termination Costs	640.0	640.0	—	—	—
Total, General Science and Research	1,604.5	1,604.5	984.0	984.0	1,017.5

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

General Science and Research Activities

For expenses of the Department of Energy activities including the purchase, construction and acquisition of plant and capital equipment and other expenses incidental thereto necessary for general science and research activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or facility or for plant or facility acquisition, construction, or expansion; purchase of passenger motor vehicles (not to exceed [12] 7 for replacement only), [$984,031,000] $1,017,530,000, to remain available until expended[: *Provided*, That none of the funds made available under this section for Department of Energy facilities may be obligated or expended for food, beverages, receptions, parties, country club fees, plants or flowers pursuant to any cost-reimbursable contract: *Provided further*, That of the amounts previously appropriated to orderly terminate the Superconducting Super Collider (SSC) project in the Energy and Water Development Appropriations Act, 1994, amounts not to exceed $65,000,000 shall be available as a one-time contribution to the completion, with modification, of partially completed facilities at the project site if the Secretary determines such one-time contribution (i) will assist the maximization of the value of the investment made in the facilities and (ii) is in furtherance of a settlement of the claims that the State of Texas has asserted against the United States in connection with the termination of the SSC project: *Provided further*, That no such amounts shall be made available as a contribution to operating expenses of such facilities].

EXPLANATION OF CHANGE

The Superconducting Super Collider project has been terminated.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH

OVERVIEW

HIGH ENERGY PHYSICS

Research in high energy physics is directed at understanding the nature of matter and energy at the most fundamental level, and the basic forces which govern all processes in nature. The primary goal of the program is to acquire new knowledge and understanding. To carry out this forefront basic research, the program develops advanced technologies for application to accelerators and detectors and new, highly sophisticated approaches to data reduction and analysis. Such technologies often find near-term as well as long-term applications in other fields.

The U.S. HEP program is widely acclaimed as being a world forefront program. Fermilab has the highest energy particle beams available anywhere, and the SLC at SLAC has the highest energy polarized electron-positron collisions available anywhere. Further, U.S. scientists are substantially involved in forefront research in all areas in this field. Thus, the HEP program is a strong contributor to the President's goal of "World leadership in basic science."

Research in high energy physics is an important part of the Department of Energy's (DOE) mission and the DOE serves as the Executive Agent for the U.S. High Energy Physics Program. High Energy Physics has proven to be an extremely challenging and fruitful intellectual activity. It attracts some of the best minds in the nation, and provides substantial input to the intellectual ferment which fuels the nation's science and engineering enterprise. High energy physics is an excellent discipline for the training of physicists, and many high energy physics Ph.D. graduates go on to highly productive careers in other scientific disciplines, as well as in industry.

High energy physics contributes to the nation's economic competitiveness. The accelerators and detectors needed for the pursuit of high energy physics research require state-of-the-art technology in many areas such as fast electronics, high speed computing, superconducting magnets, and high power radio-frequency devices. In these areas, high energy physics research often pushes the technology, and in some areas provides a major component of the civilian marketplace. Further, high energy physics continues to make major contributions to accelerator technology and provides a major portion of the expertise needed to support the substantial recent expansion of applications of accelerators to other scientific disciplines and to industrial processes (e.g. synchrotron light sources, medical diagnostics and treatment, etc). Thus, high energy physics research activities contribute in a major way to the world preeminence of the nation's scientific and technical enterprise both now and in the future.

SCIENCE FACILITIES UTILIZATION ENHANCEMENT: The High Energy Physics request includes $15,000,000 to enhance the utilization of the Department's fundamental science and user facilities. This investment will significantly increase research time available to thousands of scientists in universities, Federal agencies, and U.S. companies. It will also leverage both Federally and privately sponsored research, consistent with the Administration's strategy for enhancing the U.S. National science investment. The purpose of this targeted science initiative is to increase the utilization of the Department's large state-of-the-art science facilities. The proposed increase will support an enhanced level of operations at all three of the Department's major high energy physics facilities: the Tevatron, the Stanford Linear Collider, and the Alternating Gradient Synchrotron. In addition, approximately twenty percent of funds provided through the initiative will be administered directly to users through competitive grants. The proposed increase is consistent with the recommendations of the High Energy Physics Advisory Panel expert subpanel that advised the Department on the appropriate future path for the Department's High Energy Physics program in the wake of the cancellation of the Superconducting Super Collider project in 1993.

The budget presented herein is divided into five major categories. The Physics Research section of the budget provides support for the scientists who plan and perform research. The Facility Operations section of the budget provides support for the large accelerator and detector facilities which are essential to perform the research. The High Energy Physics Technology section of the budget provides for the advanced R&D necessary for the U.S. to have accelerator and detector facilities at the required forefront of the science. The Capital Equipment and Construction sections of the budget provide for the hardware and facilities required for ongoing progress of the research programs. Taken together, these budget categories support a balanced program of excellent research in high energy physics.

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There are three major DOE high energy physics accelerator centers: the Alternating Gradient Synchrotron (AGS) complex at Brookhaven National Laboratory (BNL), Fermi National Accelerator Laboratory (Fermilab), and the Stanford Linear Accelerator Center (SLAC), each of which provide unique research capabilities. These centers are operated as national facilities that are available to qualified experimenters on the basis of the scientific merit of their research proposals. These experimenters come from universities and research centers around the world.

Experiments by U.S. scientists are also carried out at the Cornell Electron Storage Ring (CESR) facility, which is largely supported by the National Science Foundation, and at foreign accelerators that offer unique capabilities not available in the United States. Some important high energy physics experiments do not utilize accelerators, but instead take advantage of processes that occur in the natural environment and involve experimental apparatus located deep underground, deep underwater, or on mountain tops.

More than 65 percent of the U.S. high energy physics research at accelerator facilities is performed by university-based scientists, and their participation is critical to the strength and vitality of the U.S. program. It is essential to maintain the capability of university scientists to participate effectively in world forefront experiments both at home and abroad and to maintain the technical capabilities of the major university laboratories.

The Tevatron at Fermilab is the world's highest energy particle accelerator and is distinguished as the first one to use superconducting magnets. The Tevatron will ensure that the U.S. program remains highly competitive and at the cutting edge for the next several years. The Fermilab Main Injector, presently under construction, will greatly increase the research capabilities of the Fermilab Tevatron complex.

The strategy for the overall High Energy Physics program for FY 1996 revolves around the following key factors:

o Careful planning to optimize the physics output of the program. The report of the 1994 High Energy Physics Advisory Panel Subpanel on the Vision for the Future of High Energy Physics is available and provides recommendations for structuring the program to optimize current assets and to pursue opportunities for international cooperation.

o Tevatron operation in FY 1996 will be in the fixed target mode providing beam to six new experiments. The SLAC linac will be operated for fixed target experiments in End Station A, for high energy linear collider R&D, and for physics research with the Stanford Linear Collider (SLC). With its new booster, research at BNL's Alternating Gradient Synchrotron (AGS) will improve direct tests of the Standard Model via detailed study of rare decay modes of kaons.

o Construction of the Main Injector at Fermilab will be continued. This project will greatly enhance the physics capabilities of the existing Tevatron accelerator and its detector facilities by the end of the decade. The project will provide a much higher beam intensity and, thus, the ability for confirmation of the top quark's existence and the ability to study the properties in detail.

o Construction of the B-Factory at SLAC will be continued. The B-Factory will be an asymmetric, very high intensity electron-positron colliding beam facility optimized for the study of charge-parity violation in the B meson system. This will make possible a significant series of tests of the Standard Model, and will advance our understanding of why matter dominated over anti-matter in the early moments of the big bang. This project is part of the President's FY 1994 Investment Package.

o Continued effective participation of university scientists is critical to the ongoing vitality of High Energy Physics. Universities have a leading role in providing intellectual leadership for the field of high energy physics and in training graduate and post-doctoral scientists and engineers for many fields of physics.

o Significant involvement of U.S. high energy physicists in the Large Hadron Collider (LHC) project at CERN in Geneva, Switzerland is planned. We anticipate that a satisfactory agreement will be reached with CERN which enables this involvement. When completed in the first part of the next decade, the LHC will be the world's highest energy hadron collider. To conduct research on the high energy frontier in this time period, U.S. physicists must be participants in the design and construction of the LHC and its associated detectors, activities which are already underway in Europe.

o Long-range accelerator and detector R&D studies to develop advanced concepts and technologies is critical to the long-range vitality of High Energy Physics. Priority will be given to advancing the most promising concepts.

The performance indicators for the High Energy Physics program supported by this budget request are: the attainment of new scientific knowledge; effectiveness of facility operations (done separately for each facility and mode of operation); number of scientists supported for research; and percent completion (cost and schedule milestones) against the approved project plans for the Fermilab Main Injector and the B-Factory. The performance of the HEP program in FY 1994 was measured by an ensemble of reviews of identified aspects of the program. These included: annual program reviews of the major participating DOE laboratories (ANL, BNL, Fermilab, LBL, and SLAC); semiannual reviews of the Fermilab Main Injector Project, and the B-factory Project at SLAC; review of 305 proposals for renewals of grants and contracts supporting university-based research work; reviews of 94 proposals for new work and site visits to over one hundred university locations for review and discussion of work in progress during the course of multiyear grants or contracts. All of the lab and university reviews and some portion of the site visits included outside peer reviewers. It is planned that a similar set of reviews will be undertaken in FY 1995 and beyond. In FY 1996, reviews of the U.S. involvement in LHC will be initiated.

In FY 1994, the lab and project reviews described above led, in many cases, to program office directions for significant corrective actions by the relevant contractors. The reviews of renewal proposals for university-based work also often resulted in directions for corrective actions. Of the 94 proposals for new work received during FY 1994, there were 18 acceptances and 39 rejections. Thirty seven were received in the latter part of the year and are still being processed.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

High Energy Physics

Activity	FY 1994 Adjusted	FY 1995 Appropriation b/	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
Physics Research	$144,717	$139,940	$0	$139,940	$147,155
Facility Operations	262,474	279,399	-2,836	276,563	280,152
High Energy Technology	56,651	58,190	0	58,190	67,370
Subtotal Operating Expenses	463,842	477,529	-2,836	474,693	494,677
Capital Equipment	60,100	57,700	0	57,700	63,230
Construction	86,254	111,661	-1,925	109,736	127,645
TOTAL	610,196	646,890	-4,761	642,129	685,552
Summary					
Operating Expenses	$463,842	$477,529	-$2,836	$474,693	$494,677
Capital Equipment	60,100	57,700	0	57,700	63,230
Construction	86,254	111,661	-1,925	109,736	127,645
Total Program	$610,196 a/	$646,890	-$4,761 b/	$642,129	$685,552
Staffing (FTEs)	(Reference General Science Program Direction)				

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977)

a/ Excludes $7,067,000 for the SBIR program and $236,000 for the STTR program which has been reprogrammed to Energy Supply R&D.

b/ Amount of General Reduction and Procurement Reform ($2,836,000 in operating and $1,925,000 in Construction

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

High Energy Physics

FY 1995 Appropriation	$ 646,890
- Adjustment	- 4,761
FY 1995 Adjusted	$ 642,129
Operating and Capital Equipment	
- Increase in funding for Fermilab to support a full operating program and upgrades of the collider detector	+ 8,101
- Increase in funding SLAC to support additional running and fabrication of the detector for the B-factory	+ 6,420
- Increase in operating funding for BNL to support additional running of the AGS	+ 2,854
- Decrease in capital equipment funding for BNL reflecting completion of planned upgrades to the experimental apparatus	- 3,109
- Increase for initial U.S. participation in Large Hadron Collider related R&D	+ 6,000
- Increase in funding for other parts of the HEP program (primarily universities) in accord with the increased accelerator operations	+ 5,248
Construction	
- Continuation of Fermilab Main Injector construction project	+ 9,000
- Continuation of SLAC B-Factory construction project	+ 8,000
- Reduction in funding for AIP	- 790
- Increase in GPP funding for high priority ES&H activities	+ 1,699
FY 1996 OMB Budget Request	$ 685,552

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

HIGH ENERGY PHYSICS

I. Preface: Physics Research

This activity provides support for university and laboratory based research groups conducting experimental and theoretical research in high energy physics. This research probes the nature of matter and energy at the most fundamental level, and the characteristics of the basic forces in nature. Experimental research activities include: planning, design, fabrication and installation of experiments; conduct of experiments; analysis and interpretation of data; and dissemination of results. Theoretical physics research provides the framework for interpreting and understanding observed phenomena and, through predictions and extrapolations based on existing theories, identifies key questions for future experimental explorations. This subprogram supports research groups at more than 100 universities as well as at the nine DOE laboratories which participate in high energy physics research.

Experiments in high energy physics require the use of large particle accelerators, together with complex detection apparatus, to study the results of the collisions of particles at high energies. The DOE-supported operating high energy physics accelerators are located at three existing central laboratories, BNL, Fermilab, and SLAC. These facilities are made available to qualified scientists as determined by peer review on the basis of the scientific merit and promise of their research proposals. Detectors and experimental facilities are located at the DOE accelerator laboratories, at other accelerators around the world, and at a number of sites not associated with accelerators. More than 65 percent of the research done with these facilities is performed by university-based physicists. The balance of the research is done by scientists at the accelerator laboratories and certain other DOE laboratories. Because of the size and complexity of a typical high energy physics experiment, users from a number of institutions frequently collaborate on a given experiment. These research teams typically include a mix of physicists, engineers, technicians, and graduate students. After a research proposal to the laboratory is approved, the research teams participate in the design and fabrication of the experimental apparatus and provide manpower for the experiment during the data-taking phase at the laboratory. There is significant interaction and participation from laboratory staff and use of laboratory support facilities for each experiment. The entire process, from conception of the experiment to publication of results, typically takes up to five years if no major new detector is involved; if major detector design and fabrication is involved, the total duration can be several years longer. U.S. user groups also participate in experiments which take advantage of unique accelerator capabilities and opportunities at other laboratories; for example, the Cornell Electron Storage Ring (CESR), supported by the U.S. National Science Foundation, and at foreign laboratories such as DESY (Germany), CERN (Western Europe), KEK (Japan), BEPC (China), and IHEP (Protvino, Russia). There is also a program of experiments not requiring beams from accelerators, of which experiments to search for proton decay and magnetic monopoles are presently the major component.

FY 1996 will be a year of strong research output as the researchers analyze data collected in FY 1995 and previous years from the SLC collider at SLAC with the Stanford Large Detector (SLD), and from the world unique Tevatron collider at Fermilab with its CDF and D-Zero collider detector facilities, and from fixed target facilities at BNL, SLAC, and Fermilab. Priority will be given to analysis of existing data and data collection at the operating facilities. The ongoing enhancement of the technical capabilities of the major university laboratories will proceed at a modest level. Many of the researchers supported by this funding will also be participating in R&D related to possible LHC involvement (as described in the High Energy Technology section of this budget).

II. A. Summary Table: Physics Research

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Fermi National Accelerator Laboratory	$ 11,160	$ 10,049	$ 10,130	$ 81
Stanford Linear Accelerator Center	12,368	9,875	10,105	230
Brookhaven National Laboratory	8,227	7,931	8,175	244
Argonne National Laboratory (East)	5,957	5,640	5,750	110
Lawrence Berkeley Laboratory	10,640	10,220	10,450	230
Universities and Other Labs	96,365	96,225	102,545	6,320
Total, Physics Research	$ 144,717	$ 139,940	$ 147,155	$ 7,215

II. B. Laboratory and Facility Funding Table: Physics Research

Argonne National Lab (East)	$ 5,957	$ 5,640	$ 5,750	$ 110
Brookhaven National Lab	8,227	7,931	8,175	244
Fermi National Accelerator Lab	11,160	10,049	10,130	81
Lawrence Berkeley Lab	10,640	10,220	10,450	230
Stanford Linear Accelerator Center	12,368	9,875	10,105	230
All Other	96,365	96,225	102,545	6,320
Total, Physics Research	$ 144,717	$ 139,940	$ 147,155	$ 7,215

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Physics Research			
Fermi National Accelerator Laboratory	The extended Tevatron antiproton-proton collider operating period for research, which began in FY 1993, continued. The CDF and D-Zero colliding beam detector facilities continued to collect data in FY 1994, and continued to work on data analysis and the next round of detector facility upgrade projects. The Fermilab research physicists collaborating on fixed target experiments will design, fabricate and test detector components in preparation for their next data taking. Theoretical physics, particle astrophysics and other physics research efforts will be ongoing.	Researchers working on the CDF and D-Zero colliding beam detector facilities will conclude their long data-taking run early in FY 1995 and turn their efforts to data analysis and then preparation of papers for publication. Those involved in the fixed target research program will install their apparatus and commission it for data-taking, scheduled to begin in the last quarter of FY 1995. Theoretical physics and particle astrophysics research efforts will continue.	FY 1996 will be the first year of an extended two-year operating period for the fixed-target research program. Six major new experiments will be commissioned and operated in the Fermilab Neutrino and Proton Research areas. Two new experiments will use the circulating Antiproton Accumulator beam. The Meson Research Area will be mothballed for potential future test beams. The collider physicists will continue analyses of data, and upgrade both detector facilities for the higher beam intensities expected from the Main Injector. Theoretical physics and particle astrophysics research efforts will continue.
	$ 11,160	$ 10,049	$ 10,130
Stanford Linear Accelerator Center	Research in High Energy Physics at SLAC involves experiments with the 2-mile 50 GeV linac in e+e- collider mode (SLC) using the SLD detector or in Fixed target mode using the End Station A polarized target. The large sample of Z0 decays produced by the 60% polarized electron beam in FY 1993 and FY 1994 have allowed the SLC/SLD experiment to be more than competitive with the European LEP experiments. For example, the single most-precise measurement of sine-squared theta-w now belongs to SLAC and will be improved significantly as more data are accumulated with the recently achieved 80% polarization capability of the electron linac. Detailed study of charm and tau physics continue in collaboration with the Institute of High Energy Physics in Beijing. The SLAC theoretical Physics	The highest priority will be to operate the SLC with the SLD with the highest possible beam luminosity and polarization. It is expected that moderate increases in both luminosity and polarization will enable more than an additional 100,000 polarized Z's to be measured. Complete analysis of the total accumulated Z's should, by the end of FY 1995, afford the world's best measurement of important properties of these particles. Detailed study of charm and tau physics with the recently upgraded BES detector in collaboration with the Institute of High Energy Physics in Beijing, China will continue. Data taking and analysis of experiments in End Station A using polarized beams on polarized targets will continue. Theoretical physics efforts will continue.	Results from the SLC/SLD runs of FY 1994 and FY 1995 will guide the specific objectives for data runs in FY 1996. Extended studies of systematic errors, motivated in part by the complementary results from LEP experiments, may be required. Improvements to the detector, such as the vertex chambers, will improve the quality of the additional data to be collected in FY 1996. Charm and tau physics studies at the BES detector in Beijing continue. End Station A studies of polarized electrons on a polarized target will continue. Theoretical physics efforts will continue.

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III. Physics Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Stanford Linear Accelerator Center (Cont'd)	Group provides interpretation and insight on experimental results and works with experimentalists to provide direction to future investigation.		
	$ 12,368	$ 9,875	$ 10,105
Brookhaven National Laboratory	Priority was given to exploitation of the radiation-hardened high intensity beam lines and the upgraded kaon-decay detectors. These experiments were designed to accumulate data challenging specific Standard Model predictions and testing laws of conservation of lepton flavors. Major components of the muon (g-2) detector were ready for testing. Analysis of data from the D-Zero experiment at Fermilab continued as D-Zero continued to run through most of FY 1994. Theoretical efforts continued.	The BNL Physics Department will be emphasizing data collection by three of the major High Energy Physics experiments using the high intensity slow-extracted proton beam. A new fast extraction system and beamline will begin to deliver beam to the muon g-2 experiment for commissioning of the magnet ring and detectors. There will be heavy analysis work on the large data set accumulated by the D-Zero experiment. Theoretical efforts will continue.	Experimental research will focus on operation of experiments at the AGS, especially two of the rare Kaon decay experiments and the search for exotic Meson states. The muon "g-2" experiment will have its initial engineering shakedown run. Analysis of D-Zero data from the recently completed run at the Fermilab Tevatron will be intensive. The theory program will continue at a constant level-of-effort. The HEP research group will be developing other initiatives, possibly including studies for using the Large Hadron Collider at CERN.
	$ 8,227	$ 7,931	$ 8,175
Argonne National Laboratory (East)	The ANL program continued its strong participation in the operation of the CDF detector at Fermilab and in the operation of the ZEUS detector at DESY. The SOUDAN-2 detector was in its second year of steady-state running. The theoretical research effort continued at about the same level of effort.	ANL experimental groups will continue as major collaborators on two world-class colliding beam experiments: the CDF experiment at Fermilab and the ZEUS electron-proton experiment at DESY. The SOUDAN-2 detector will be progressing to its goal of 5 kiloton-years of proton-decay data. The theory group will continue at about the same level of effort.	Argonne groups will continue to play important roles in the CDF experiment at Fermilab and the ZEUS experiment at DESY in Hamburg, Germany. By the end of 1996 the underground Soudan detector in Minnesota will have recorded 75% of its planned data in search of proton decay. Plans for participation in an experiment at the Large Hadron Collider at CERN will be under development. Theoretical research, including lattice gauge calculations, will continue at about the same level of effort.
	$ 5,957	$ 5,640	$ 5,750

III. Physics Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Berkeley Laboratory	The CDF and D-zero groups concentrated on analysis of the Tevatron collider data gathered this year. Evidence for the top quark, determination of electroweak parameters, and B meson results have been obtained. A new silicon vertex detector was installed in CDF and the design and building of a silicon tracker for D-zero continues. Detector development for SLAC's B-factory has started. LBL also participated in the unique polarized electron study now underway with the SLD detector at SLAC. LBL is involved in the termination process for SSCL's SDC detector project. The completion and documentation of some aspects of previous SDC work is being done. The astrophysics supernova search discovered several distant supernovas. LBL finished the fabrication and preliminary assembly of the "icebox" electrical systems for the cryogenic detectors being prepared for a dark matter search experiment. The experimental program to detect and then map anisotropies in the Cosmic Microwave Background (CMB) continues. Data from the Cosmic Background Explorer (COBE) satellite is being received and analyzed. In addition, work on follow - on experiments is being done. The strong theory program continued their efforts in particle theory, particle astrophysics, and formal theory. The theory group contributed to the planning of experiments at future hadron colliders. The Particle Data Group, which serves as the archivists of measurements of particle properties, also is an active member of the Contemporary Physics Education Project.	The CDF and D-zero teams will complete the analysis of the Tevatron collider data gathered in FY 1994, thereby extending the search for the top quark to 180 GeV. The D-zero group will install the new silicon detector system. Analysis will go forward on the large polarized e-e+ sample gathered in the SLD detector at SLAC. The astrophysics supernova search will have two extensive periods of observations while the dark matter detector will move to a deep underground location and have its first major run. The theory and astrophysics groups will continue and the Particle Data Group will continue its efforts on particle properties.	The CDF and D-zero groups will continue data analysis and participation in the planned upgrades to these detectors. Final designs for the B-factory detector subsystems will be developed and preparations made for production. Work will continue on the ATLAS project at CERN. The SLD effort will continue. The supernova search group plans to complete the analysis of first data from the new 4-chip camera and to begin work on the next generation of astronomical detectors and cameras. The initial physics results from the dark matter pilot experiment is anticipated. Data analysis from other instruments will continue and potential new experiments will be studied. The theory group and the Particle Data Group will continue their efforts.

III. Physics Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Berkeley Laboratory (Cont'd)	$ 10,640	$ 10,220	$ 10,450
Universities and Other Labs	University-based scientists and staff from other DOE laboratories have participated in preparation for, execution of, and data analysis for major experiments at U.S. and foreign laboratories and have conducted theoretical investigations into the fundamental properties of matter and energy. Preparation for and execution of physics research has included colliding beam experiments with the D-Zero and Collider Detector at Fermilab (CDF) detectors at the Tevatron, with the Stanford Large Detector (SLD) at SLAC, with the L3, ALEPH, OPAL, and DELPHI detectors at the Large Electron Positron (LEP) accelerator complex at CERN, and with the ZEUS detector at the Hadron Electron Ring Accelerator (HERA) complex at DESY. University-based data analysis activities have made essential contributions to evidence for the existence of the top quark and to high precision knowledge of the parameters of the electroweak interaction. Installation of scintillator material and electronics for the second half of the MACRO detector (Gran Sasso, Italy) was completed, and data taking with the full detector is scheduled for FY 1995. Fixed target experiments were reinstrumented at BNL in preparation for improved sensitivity rare kaon decay measurements. To optimize support for the highest priority activities, reviews of university-based grant programs and other DOE laboratory programs were conducted. When indicated, new work was initiated and ongoing work was brought to conclusion. Included is $120,000 for a computer	Groups at universities and other DOE laboratories will participate in major experiments at U.S. and foreign laboratories. Important new experiments will continue running, including: fixed target experiments at the Tevatron (Fermilab); the L3, ALEPH, OPAL and DELPHI experiments at LEP (CERN); the ZEUS experiment at HERA (DESY); the MACRO experiment (Italy); the SOUDAN-2 experiment (Minnesota); and the GRANITE experiment (Arizona). Also, some upgraded experiments at BNL for rare K-decays will be running, as will the search for exotic mesons, the search for highly strange nuclei, and the precision measurement of the muon anomalous magnetic moment will be in final steps of preparation. An extensive effort to analyze D-Zero and CDF data will continue. To optimize support for the highest priority activities, a small number of university groups will be dropped or substantially reduced. Includes $120,000 for a computer lease at the Laboratory for Nuclear Science (LNS) at MIT.	Groups at universities and other DOE laboratories will continue to exercise leadership in major experiments at U.S. and foreign laboratories and to conduct advanced theoretical investigations. Many of the physicists in the universities will be planning for possible involvement at the LHC, and in detector R&D for LHC as described in the High Energy Technology section of this budget. Important experiments include fixed target experiments at the Tevatron and SLAC and colliding beam experiments at LEP and DESY. Preparation for the next cycle of colliding beam experiments at D-Zero and CDF will be a major effort. University participation in the high luminosity, high polarization electron beam collider experiments at SLD and in preparation for research with the B-Factory at SLAC will be important aspects of the program. Emphasis will be given to analysis of SLD, D-Zero and CDF data. The underground MACRO and Soudan experiments will continue data taking with fully instrumented detectors. Also, some upgraded experiments at BNL for rare K-decays will be running, as will the search for exotic mesons, the search for highly strange nuclei, and the precision measurement of the muon anomalous magnetic moment will have its initial run. Redirection and optimization of university-based and other DOE laboratory programs will continue to meet emerging needs and opportunities. Includes $287,000 for computer leases at the Laboratory for Nuclear Science (LNS) at MIT.

III. Physics Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Universities and Other Labs (Cont'd)	lease at the Laboratory for Nuclear Science at the Massachusetts Institute of Technology.		
	Funding in the amount of $2,648,000 has been transferred to the SBIR program.	Funding in the amount of $329,000 and $475,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $3,305,000 and $262,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 96,365	$ 96,225	$ 102,545
Physics Research	$ 144,717	$ 139,940	$ 147,155

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

HIGH ENERGY PHYSICS

I. Preface: Facility Operations

This activity includes funding for the operation and maintenance of the national laboratory research facilities including accelerators, colliders, secondary beam lines, detectors for experiments, experimental areas, computing, and computer networking facilities. It includes the costs of manpower, electric power, expendable supplies, replacement parts and subsystems, and inventories. The major DOE supported facilities to be operated in FY 1996 are the Fermilab Tevatron (800 GeV proton fixed target and 900 GeV antiproton-proton colliding beams); SLAC (50 GeV linear accelerator) and the SLC (50 GeV, GeV electron-positron collider); and the BNL AGS (25 GeV proton fixed target program) with the recently commissioned AGS booster. The BNL AGS, SLC and the linac at SLAC, and the Fermilab Tevatron, along with their associated research detector facilities, will be operated for physics for most of FY 1996.

II. A. Summary Table: Facility Operations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Fermi National Accelerator Laboratory	$ 138,163	$ 141,640	$ 146,420	$ 4,780
Stanford Linear Accelerator Center Operations	78,370	78,205	80,810	2,605
Brookhaven National Laboratory-AGS Operations	41,810	43,115	45,545	2,430
Other Operations	4,131	13,603	7,377	-6,226
Total, Facility Operations	$ 262,474	$ 276,563	$ 280,152	$ 3,589

II. B. Laboratory and Facility Funding Table: Facility Operations

Brookhaven National Lab	$ 41,810	$ 43,115	$ 45,545	$ 2,430
Fermi National Accelerator Lab	138,163	141,640	146,420	4,780
Stanford Linear Accelerator Center	78,370	78,205	80,810	2,605
All Other	4,131	13,603	7,377	-6,226
Total, Facility Operations	$ 262,474	$ 276,563	$ 280,152	$ 3,589

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facility Operations			
Fermi National Accelerator Laboratory	For most of FY 1994, the D-Zero and CDF detectors will be taking data using the significantly higher Tevatron luminosity which the upgraded Linac capabilities made possible. The Tevatron is anticipated to be in operation for physics research in its antiproton-proton collider mode for as many as 45 weeks during FY 1994.	The extended period of operations for data-taking for the antiproton-proton collider program will continue through most of FY 1995. Both the CDF and the D-Zero collider detector facilities are expected to collect data for most of the year. Preparations will also be ongoing for the major fixed target experimental program scheduled to begin by the second quarter of FY 1996. Tevatron operations for research are expected for 39 weeks during FY 1995, all in the antiproton-proton collider mode.	The fiscal year begins with a 9 week period of colliding beam data-taking. After a 3 month changeover and maintenance shutdown, the Tevatron is scheduled to be in operation for fixed target physics research for about 28 weeks during FY 1996. Eight major experiments are scheduled to take data: three in the Neutrino Experimental Area, three in the Proton Experimental Area, and two using the Antiproton Accumulator. The Tevatron will operate for research for a total of 37 weeks in FY 1996.
	$ 138,163	$ 141,640	$ 146,420
Stanford Linear Accelerator Center Operations	SLAC will operate in the SLC/SLD collider mode for much of the year (22 weeks) to accumulate data with electron polarization approaching 80%. The greater analyzing power which this unique capability affords will be exploited to determine the cause of the possible discrepancies with LEP experiments to reassure the electro-weak mixing angle, theta-w, as more data are accumulated. The Linac will also serve the fixed target program with beam to End Station A (11 weeks) and also the Linear collider R&D program, including the Final Focus Test Beam.	The SLC will operate for about 25 weeks and with near 80% beam polarization. With this polarization and the extremely small size of the beams, the state-of-the-art SLD detector is expected to continue to provide important new research results. The polarized target experiments in End Station A using polarized electron beams from the SLAC linac will be upgraded and begin running at the beginning of FY 1996. Short runs will be made in parallel with SLC operation with Final Focus Test Beam as appropriate.	The SLC/SLD will operate for about 25 weeks with polarization near 80%. The fixed target operation in End Station A will run for about to 10 weeks. Additional Linac running at lower rep rates which reduces costs will provide beams for high energy Linear collider R&D studies and for Final Focus Test Beam studies.
	$ 78,370	$ 78,205	$ 80,810

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III. Facility Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Brookhaven National Laboratory-AGS Operations	The AGS operated for about 14 weeks with a slow extracted beam so as to optimize the exploitation of the more intense beams and the upgraded detectors used to study the rare K-decays. In total five or six experiments were operated simultaneously greatly enhancing the experimental program. The AGS is also ran for 6 weeks for nuclear physics.	The accelerator complex will deliver about 17 weeks of slow-extracted proton beam for HEP data-taking. Emphasis will be on maintaining the operational readiness and efficiency of the external beamlines and the 5 major HEP experiments. There may be some further tests of polarized protons in the Booster/AGS complex. The complex is expected to accelerate heavy ions for 5 weeks of nuclear physics. This additional running is funded by the Nuclear Physics program.	The Booster/AGS accelerator complex will deliver about 19 weeks of slow-extracted proton beam to the 5 HEP experiments. A test beam for R&D on components for detectors at RHIC will also operate. The g-2 experiment will use about 2 weeks of beam for engineering shakedown, and there may be about 2 weeks for studies of polarized protons in the AGS. The Booster/AGS will operate for at least 4 weeks accelerating heavy ions. This additional running is funded by the Nuclear Physics program.
	$ 41,810	$ 43,115	$ 45,545
Other Operations	Continuation of FY 1993 program at about the same level of effort for program specific computer networking activities. Funding in the amount of $1,655,000 and $236,000 has been transferred to the SBIR program and the STTR program, respectively.	Continuation of FY 1994 program for program specific computer networking activities at about the same level of effort. Funding in the amount of $8,588,000 has been budgeted for the SBIR program.	Continuation of FY 1995 program for program specific computer networking activities at about the same level of effort. Funding in the amount of $3,234,000 and $230,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 4,131	$ 13,603	$ 7,377
Facility Operations	$ 262,474	$ 276,563	$ 280,152

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KEY ACTIVITY SUMMARY

HIGH ENERGY PHYSICS

I. Preface: High Energy Technology

This activity provides funding to maintain and develop the technological base that supports the scientific effectiveness, reliability, and efficiency of existing High Energy Physics research facilities and that is essential for extending the capabilities of accelerators, colliders, and detectors by developing and proving new concepts and technologies. It includes R&D with a near term focus in support of current, ongoing construction projects, fabrication of major detectors, and improving existing research capabilities. There is also a strong longer-term focus on development of advanced concepts leading to greater performance capability and more cost effective operation of accelerator and detector facilities. It also includes theoretical studies of accelerator physics; exploration of new concepts for particle acceleration, storage, and transport; and fabrication and testing of apparatus based on these studies. This activity also includes studies of new types of detectors and improved detector performance, for example: improved particle identification, improved precision in delineating tracks and locating vertices, decrease in susceptibility to degradation of performance caused by nuclear radiation, etc. The High Energy Physics Technology program is carried out primarily in the DOE laboratories, but with a significant program of advanced concept development in universities and industry. Since the limits of present accelerator technology are being reached by present generations of existing and planned machines, a strong effort has focused on a search for new accelerator technologies applicable to the long-term needs for physics research.

II. A. Summary Table: High Energy Technology

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Fermi National Accelerator Laboratory	$ 14,393	$ 14,375	$ 14,775	$ 400
Stanford Linear Accelerator Center	14,368	13,490	13,820	330
Brookhaven National Laboratory	6,232	5,838	6,018	180
Lawrence Berkeley Laboratory	8,999	8,929	9,140	211
Universities, Other Laboratories, and Other Contractors	12,659	15,558	23,617	8,059
Total, High Energy Technology	$ 56,651	$ 58,190	$ 67,370	$ 9,180

II. B. Laboratory and Facility Funding Table: High Energy Technology

Brookhaven National Lab	$ 6,232	$ 5,838	$ 6,018	$ 180
Fermi National Accelerator Lab	14,393	14,375	14,775	400
Lawrence Berkeley Lab	8,999	8,929	9,140	211
Stanford Linear Accelerator Center	14,368	13,490	13,820	330
All Other	12,659	15,558	23,617	8,059
Total, High Energy Technology	$ 56,651	$ 58,190	$ 67,370	$ 9,180

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
High Energy Technology			
Fermi National Accelerator Laboratory	R&D was continued in support of the Main Injector construction project. Calculations of the machine impedance and thresholds for associated beam instabilities were done, as were theoretical studies of beam behavior during injection and extraction. R&D was completed on the dipole, quadrupole, and sextupole magnets, and production of these magnets began. R&D on the dipole power supplies and rf power amplifier was also completed. R&D also continued in support of improving the existing accelerator complex and detectors.	R&D in support of the Main Injector construction project will continue, as the design work on the last of its technical components is finalized. R&D in support of efforts to increase the energy, the extracted beam intensity and the colliding beam luminosity of the Tevatron and the beam intensity of all of the other existing accelera.ors, including aperture enhancements for the antiproton source, will be undertaken. Priority will be given for R&D to improve the reliability of all accelerator systems and for R&D activities associated with the Fermilab colliding beam experimental programs using the CDF and D-Zero detector facilities.	R&D will be ongoing with the goal of further increasing the luminosity of the collider and the intensity of the fixed-target beams. This will be accomplished by improving the intensity of the proton and antiproton sources, and by studying (and seeking remedies for) instabilities in the Main Ring and the Tevatron that limit their ability to accelerate beams from these sources with minimal losses and phase-space dilution. R&D on future linear colliders will continue. As part of the FY 1996 fixed-target run, improvements that will have been made to the CDF and D-Zero detector facilities (to accommodate Collider Run II luminosities) will be tested. Fixed-target beam lines for the Main Injector era will be designed, and high-performance computing systems will be developed to meet the increased demands of high energy physics data acquisition, analysis, and theoretical calculations.
	$ 14,393	$ 14,375	$ 14,775
Stanford Linear Accelerator Center	A strong R&D program supported the operation of the SLC for physics. Rebuilt damping rings were brought on-line and an improved strained lattice photocathode electron source brought polarization from about 60% to over 80%. R&D for these and other improvements has boosted physics productivity for the SLD detector. R&D in support of the B-factory construction project continued to focus on broad band, multibunch feedback systems; the elimination of higher	R&D continues for higher beam intensity and polarization capabilities for future high energy electron-positron linear colliders at an increased level over FY 1994. Better cathodes and other polarized source improvements, combined with tests on spin manipulation techniques, should result in beam polarization capability approaching 80 percent. Experimental and theoretical work on very high current beams and high luminosity detectors will continue. Experiments	R&D in support of B-factory construction will be concluded in FY 1996 with final effort on the radiofrequency systems and in support of the detector fabrication. R&D will continue, but at a reduced level, in support of improved operation of the SLC and the SLD detector for physics with a focus on higher luminosity and electron beam polarization. Experiments using the Final Focus Test Beam will continue to explore improved optics, beam based self-alignment, and

III. High Energy Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Stanford Linear Accelerator Center (Cont'd)	order modes in the high power radiofrequency cavities; high power microwave tube development; and the development of vacuum chambers capable of handling the high heat load resulting from the high power levels of synchrotron radiation. Long range R&D in support of the technology for next linear colliders continued at a level reduced from FY 1993. Experiments using the recently completed Final Focus Test Beam began with achievement of a 73 nanometer vertical beam dimension and the successful demonstration of two new types of beam profile monitors to measure these tiny beam sizes. Development of a 1 GeV accelerator module to study new linear accelerator structures and radiofrequency power sources operating at 11.4 GHz continued. R&D to develop technology and prepare a conceptual design report for the B-factory detector proceeded on schedule.	using the Final Focus Test Beam needed for the development of linear colliders in the TeV range will continue. Fabrication of the accelerator test module and beam line to study new linear collider accelerator structures and test new radiofrequency power sources and other microwave components will continue. R&D in support of the B-Factory and the B-Factory detector will continue.	innovative instrumentation for the purpose of achieving precision control over the small beam size needed for linear colliders. This facility will also be exploring very high peak power laser beam back scattering of the 50 GeV electron beam which is relevant to the gamma-gamma collider concept. A continuing activity will be the assembly and commissioning of portions of the Next Linear Collider Test Accelerator which will explore questions about radiofrequency power sources operating at 11.4 GHz, acceleration structures operating at gradients above 50 MeV per meter, and new instrumentation and diagnostics systems.
	$ 14,368	$ 13,490	$ 13,820
Brookhaven National Laboratory	This activity supports R&D programs to improve reliability of AGS operation and for improvement of particle detectors, beam lines, and targets for AGS experiments. R&D for advanced accelerator concepts is also supported. Priority was given to R&D in support of AGS operation. Components such as the multi-pulsing fast kicker and the new ejector septum for the new, fast AGS extraction system to deliver beam to the g-2 experiment have been fabricated. A Partial Siberian Snake to eliminate the imperfection spin depolarization resonances was installed in the AGS and tested successfully.	Priority will be given to R&D activities in support of AGS operations. Existing capabilities of particle detectors, beam lines and targets for AGS experiments will be maintained. Work on the beam line for the muon g-2 experiment will be continued. The laser system at the ATF will be upgraded to 100 gigawatts for use in testing novel acceleration techniques. The experimental program at the ATF aimed at testing novel acceleration concepts will continue.	Priority will be given to R&D activities of the Accelerator Test Facility (ATF), the Center for Accelerator Physics, and the Instrumentation Division. The ATF user program, including the laser grating accelerator, Inverse Cerenkov, and Inverse Free Electron Laser experiments, will continue using the upgraded 100 gigawatt laser system. Work for the muon g-2 experiment including the muon kicker will continue.

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III. High Energy Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Brookhaven National Laboratory (Cont'd)	Improvements at the Accelerator Test Facility (ATF) including upgrades of the linac, laser system, and electron gun to provide a higher brightness beam, have been completed and the experimental program commenced. Novel accelerator concepts are being experimentally tested at the ATF.		
	$ 6,232	$ 5,838	$ 6,018
Lawrence Berkeley Laboratory	The R&D programs to improve the performance of accelerator and storage ring subsystems were continued. This included support of very advanced superconducting material and magnet technology needed for the future national program. Activities in very advanced, exploratory accelerator R&D has continued to focus on radio-frequency (rf) power systems, methods of vacuum improvement, beam dynamics, magnet design, and studies of new accelerator and beam concepts, including tests using the beam from the Advanced Light Source (ALS) linac. This year the ALS test beam line was completed and experimental studies on plasma lens concepts were begun. R&D in support of Fermilab's upgrade of the DO detector subsystems has been proceeding. Accelerator and detector R&D in support of the B-Factory project at SLAC has been in progress.	Progress continues on technology R&D with priority as described in FY 1994. Advanced accelerator studies will include radiofrequency characterization of vacuum hardware and radiofrequency feedback designs. Experiments using the Advanced Light Source Beam Test Facility will continue. Completion of plasma lens tests for focusing relativistic electron beams is expected, and there will be initiation of experiments on laser-electron beam interactions, novel radiofrequency structures, and novel diagnostic techniques. R&D in support of the B-Factory and its detector will continue.	Technology R&D will continue on very advanced accelerator and detector concepts. Superconducting magnet R&D will emphasize even higher magnetic fields (about 16 Tesla) as a goal. Studies on advanced accelerator and beam concepts using the Advanced Light Source Beam Test Facility will include new experiments recommended by the Experimental Program Committee and further studies of novel rf structures. R&D for the Fermilab D-Zero detector upgrade includes preparations for the replacement of the vertex chamber with a new silicon tracking system that is based on LBL-developed technology. Also, R&D on the upgrade of the silicon vertex detector, part of the highly successful CDF detector at Fermilab, will be in progress. General studies of very advanced detector concepts will continue. B-Factory accelerator R&D will focus on rf and other components for the low-energy ring. R&D on the new detector for the B-Factory will include work on front-end electronics, silicon vertex detector, data acquisition and trigger electronics and on-line monitor and control systems.

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III. High Energy Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Berkeley Laboratory (Cont'd)	$ 8,999	$ 8,929	$ 9,140
Universities, Other Laboratories, and Other Contractors	This subprogram supported a broad range of topics in very advanced accelerator and detector technologies needed to ensure a strong future experimental research capability in high energy physics. Research carried out in universities, industry, research institutes, and government research centers (e.g. NIST, NRL, etc.) addressed topics ranging from development of improved superconductors through new and advanced accelerator concepts, such as the use of lasers and collective effect phenomenon to accelerate charged particles, to new theoretical concepts in non-linear charged particle beam dynamics. Experimental tests of advanced accelerator concepts continued on the laser wakefield accelerator, inverse Cerenkov accelerator, and inverse free electron laser accelerator advanced the physics plausibility of those devices achieving in one case of about 36ev per meter. The focus of this set of activities is on technologies applicable beyond the year 2000. Some exploratory work on the development and potential application of very high critical field superconducting magnets continued in progress. A concerted effort was made to search for promising new charged particle beam acceleration concepts. It should be noted that the principal funding for graduate student training in accelerator physics is in this subprogram.	The program will continue the focus on utilization of the special resources of universities, industry, not for profit research institutes, and government laboratories to address a broad spectrum of technology development important to the long term future productivity of the physics research. Tests will continue on a variety of new charged particle acceleration concepts using the facilities at universities and at ANL and BNL. Acceleration schemes include ideas based on lasers, plasmas, and collective beam effects. Particle-beam physics studies will be in progress at the UCLA 20-MeV linac using the new high brightness source. Alternate concepts for microwave power and high gradient accelerator structures for future linear colliders will continue. Studies will also continue on conductor materials for very high field superconducting magnets with increased current-carrying capability and on very-high field magnets. There will be continued application of theoretical concepts such as nonlinear beam dynamics to particle accelerators. Work on advanced, generic technologies for future particle detectors will also be supported.	The broad range of physics and technology R&D studies supported in FY 1995 in universities, industry, and Federal laboratories will continue. The work is aimed at improved high energy physics related technology which can make possible future accelerators and detectors with enhanced capabilities, improved efficiencies and possibly reduced costs. Much of the technology developed here spins off eventually to American industry, some in the short term and some in the very long term. The mix of very practical, for example support for standards maintenance and development, to the esoteric and theoretical, exemplified by laser acceleration of charged particles in plasmas and research in nonlinear dynamics, will continue. Program activities of special interest in FY 1996 will include startup of a new wakefield accelerator experiment at ANL, continued high-power microwave testing at LLNL, and a variety of new accelerator concept tests at the accelerator test-bed at BNL. Work will continue on superconducting materials for very high field superconducting magnets and on new and innovative approaches to designing and building magnets which are beyond the current state-of-the-art, with a specific target of going above 15 Tesla. R&D also continues on generic technology for future particle physics detectors.

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III. High Energy Technology (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Universities, Other Laboratories, and Other Contractors (Cont'd)	No LHC activity.	LHC activity at a low level and not separately identified.	Funding in the amount of $4,800,000 is also included for the initiation of collaborative activities with CERN on the LHC. This funding is requested in anticipation that a satisfactory agreement will be reached with CERN for significant U.S. participation in the LHC project. The activities that would be supported have not been identified in detail, but would be associated with both the accelerator and the detectors. Specific efforts associated with the accelerator might include: superconductor wire testing and R&D; superconducting magnet R&D and design, including the intersection regions; design, modeling, and prototype development of beam transfer lines; and beam vacuum chamber screening R&D. Detector R&D efforts might be focused on muon chambers, tracking detectors, and hadron and electromagnetic calorimetry.
	Funding in the amount of $2,764,000 has been transferred to the SBIR program.	Funding in the amount of $577,000 has been budgeted for the SBIR program.	Funding in the amount of $3,355,000 and $250,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 12,659	$ 15,558	$ 23,617
High Energy Technology	$ 56,651	$ 58,190	$ 67,370

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

HIGH ENERGY PHYSICS

I. Preface: Capital Equipment

Capital equipment funding provides the secondary beam line components, particle detection apparatus, and data analysis systems essential to do high quality, forefront high energy physics experiments. It also provides for replacement of accelerator and detector facility components that have worn out or become obsolete. A proper complement of detectors and secondary beams is essential for effective utilization and operation of the high energy physics accelerator and colliding beam facilities.

Timely introduction of new beam and detector capabilities, and the regular upgrading and modification of existing capabilities, is essential. The large scale of the equipment required for high energy physics research systems is illustrated by a few examples: a typical secondary beam line can range from several hundred feet to a mile or more in length, and requires many beam transport, beam shaping and control elements; the portable shielding required around detectors and targets can involve arrays of hundreds of shielding blocks weighing as much as 10 tons each; the analysis magnets incorporated in detection systems weigh many tons; large calorimeters of 300 tons or more are not uncommon; and electronics systems with hundreds of thousands of data channels are typically required for major detectors. A time span of as much as five years is often involved from design, through fabrication, to installation, checkout, and operation of these large systems. Examples of specific items of equipment needed include: beam transport magnets; large spectrometer magnets for detector systems; precision regulated power supplies; particle beam diagnostic and control systems; electronic and optical detectors with precision spatial and time resolution; high precision calorimeters and tracking chambers for colliding beam detectors; high speed and large volume data processing systems; special cryogenic components for liquid hydrogen targets and superconducting devices; and a host of specialized electronics and other items of laboratory support equipment.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Fermi National Accelerator Laboratory.....	$ 27,015	$ 26,745	$ 29,585	$ 2,840
Stanford Linear Accelerator Center.....	11,690	12,475	15,730	3,255
Brookhaven National Laboratory.....	8,380	5,299	2,190	-3,109
Universities and Other Laboratories.....	9,090	9,256	11,800	2,544
Brookhaven National Laboratory- General Purpose Equipment.....	3,925	3,925	3,925	0
Total, Capital Equipment	$ 60,100	$ 57,700	$ 63,230	$ 5,530

II. B. Laboratory and Facility Funding Table: Capital Equipment

Brookhaven National Lab	$ 12,305	$ 9,224	$ 6,115	$ -3,109
Fermi National Accelerator Lab	27,015	26,745	29,585	2,840
Stanford Linear Accelerator Center	11,690	12,475	15,730	3,255

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II. B. Laboratory and Facility Funding Table: Capital Equipment

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	9,090	9,256	11,800	2,544
Total, Capital Equipment	$ 60,100	$ 57,700	$ 63,230	$ 5,530

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
Fermi National Accelerator Laboratory	Steadily increasing colliding beam luminosity and shorter beam crossing time make it essential to replace the original CDF calorimeter readouts based on a gaseous ionization collection medium with a system using fast scintillating materials. This also makes possible removal of the forward calorimeters, such that the forward and backward muon toroids can be moved closer to the central detector. The solid angle for muon detection would thereby be significantly increased. The same effects will render the D-Zero central tracking systems marginal, and they are to be replaced with a fast and radiation hard scintillating fiber tracking system. The equipment funding required for improvements to these two Fermilab collider detector facilities in FY 1994 totals $7,335,000 for CDF and $7,000,000 for D-Zero. Preparation of the new major fixed target experiments scheduled to begin research operation in FY 1995 will be supported at $6,100,000. A major fraction of that sum will be needed to complete a major new detector for the precision study of neutral K meson decay modes. Data acquisition electronics and additional computing capabilities in the experimental areas, as well as	Upgrades and improvements to the CDF detector facility will require $6,800,000 in FY 1995. Emphasis will be on modifications needed to operate with a very short time interval between triggers, which include major changes to the data acquisition electronic systems. Final testing calibration and installation of the new scintillator based forward and backward calorimeter systems will be completed. The D-Zero detector facility will need $7,400,000 for its upgrade program. As for CDF, priority will be given to the electronics required for short trigger interval times. The pulse shaping electronics for the calorimeters will require major improvements, as will the trigger system overall. Signal processing for the muon detection system will also have to be made faster. The Tevatron fixed target research programs will require $6,500,000 in FY 1995. The purchase of much of the commercially available data acquisition electronics for the fixed target experiments will be made early in the fiscal year, so that it can be installed for the scheduled data taking towards the end of the fiscal year. Improvements to beam line diagnostics, vacuum systems and particle detectors	The Fermilab Main Injector project will become operational late in FY 1998. Improvement programs for both the CDF and the D-Zero detector facilities will be continued in FY 1996 in order to prepare for the significantly higher colliding beam luminosities which will result. The CDF facility will require $9,800,000 with emphasis on improvements to the Silicon Vertex Detector systems, upgrades to the muon detection system and faster front end electronics modules. D-Zero improvements will center on a silicon-based central tracking system and faster trigger system electronics, and will require in total $8,700,000. The Tevatron fixed target experiments will need $6,500,000 with a major emphasis on electronics and data acquisition systems, and the completion of the new KTeV detector facility. Improvements to the Massively Parallel data and computing systems in the central facility and at the experiments will total $3,200,000. Equipment in support of the accelerator complex, R&D programs and general site needs will be $1,385,000.

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Fermi National Accelerator Laboratory (Cont'd)	extensions to the central computing facility ($3,680,000) are required. Equipment is required in support of R&D programs, the accelerator complex, and for general site requirements ($2,900,000).	will also be supported. General purpose data acquisition electronics and improvements to both online and central computing equipment capabilities will require $3,500,000. Equipment in support of R&D programs, the accelerator complex and general site requirements will need $2,545,000.	
	$ 27,015	$ 26,745	$ 29,585
Stanford Linear Accelerator Center	Funds were be provided to initiate the B-Factory detector ($2,500,000) and for the highest priority needs of the SLC/SLD research program ($2,320,000). Funds were provided in support of other physics research including computer equipment ($2,300,000) and to meet needs in advanced accelerator R&D including the Final Focus Test Beam ($3,500,000). Support was also provided for general laboratory equipment including new machine tools, Computer Aided Design/Computer Aided Manufacturing, and heating, ventilation and air conditioning upgrades ($1,070,000).	Funds will be provided for the B-Factory detector ($7,515,000). Funds will be provided in support of other physics research including computing equipment ($1,500,000). Funds for equipment in support of advanced accelerator R&D leading to high energy linear colliders will also be provided ($2,100,000). Capital equipment in support of the fixed target program in End Station A will be funded ($550,000). Support will also be provided for general laboratory equipment including high voltage gear, Computer Aided Design/Computer Aided Manufacturing systems, new machine tools, and heating, ventilation, and air conditioning upgrade ($810,000).	Funds will be provided for the B-Factory detector ($9,000,000). Funds will be provided in support of other physics research ($1,800,000) and for the Mass Storage System Upgrade ($1,200,000). Funds for equipment in support of advanced accelerator R&D leading to high energy linear colliders will also be provided (2,200,000). Capital equipment in support of the fixed target program in End Station A will be funded ($780,000). Support will also be provided for general laboratory equipment including high voltage gear, Computer Aided Design/Computer Aided Manufacturing systems, and new machine tools ($750,000).
	$ 11,690	$ 12,475	$ 15,730

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Brookhaven National Laboratory	The level of funding for this effort is increased to continue support for the muon anomalous magnetic moment (g-2) experiment ($2,000,000); support for upgrades to the experiments to handle the new higher AGS intensities ($2,540,000); beamline components, including radiation-hardened magnets and new shielding ($2,545,000); accelerator R&D ($710,000); and general AGS support ($585,000).	Capital equipment funding is reduced, following the 5-year profile developed in 1992 in coordination with BNL management as part of the upgrade/run/terminate planning for the HEP program at the AGS. Continued fabrication of the muon g-2 experiment ($1,649,000); preparation of the experiments for high intensities ($2,000,000); beamline components and shielding ($1,000,000); accelerator R&D ($580,000).	Capital equipment funding is provided in support of the Physics Research and Accelerator R&D groups, and in support of the ongoing operation of the AGS ($2,190,000).
	$ 8,380	$ 5,299	$ 2,190
Universities and Other Laboratories	University-based scientists' participation in data analysis and in preparation for new and upgraded experiments required computer equipment for data analysis, event reconstruction, and detector simulation and required instrumentation for R&D in support of upgrade of components of detectors at the accelerator laboratories. In addition, equipment for the actual fabrication of components was provided. Hardware for advanced accelerator concept experiments at the Advanced Test Facility at BNL and the ANL Wakefield Test Facility was included. Ongoing university program detector component fabrication efforts included: preparation for high sensitivity rare decay experiments and precision measurement of the muon's anomalous magnetic moment at BNL; upgraded muon and silicon vertex systems at the Tevatron's collider detectors; improved polarized beam intensity and polarization determination capability at SLAC; and increase in the muon detection capability of the L3 detector at CERN. Work also included	University-based scientists will participate in new experiments in the major fixed target run planned at Fermilab, on rare K-decays, neutrino interactions, neutrino oscillations, hyperons and B-particles. It is anticipated that there will be a few other new experiments, including for example, Super-Kamiokande (Japan). Some funding will be provided to meet, in part, ongoing needs for upgrade of computer and other data analysis equipment, as well as advanced equipment for design and fabrication of experimental equipment, in order that university-based physicists can fully and actively contribute to high energy physics research on campus. Hardware for advanced accelerator concept experiments at the BNL-ATF and the ANL wakefield test facility is included. Data taking in FY 1994 of some upgraded rare K-decay experiments and searches at BNL will be in progress. Capital equipment funds are needed at LBL for equipment to support ongoing experiments at Fermilab and SLAC, equipment for advanced detector prototypes, for equipment in support of	University-based scientists are expected to be intellectual leaders and principal participants in major detector design and component fabrication efforts at the SLAC B-Factory, in planning for LHC detectors, and in upgrade of the D-Zero and CDF detectors at the Tevatron. This work requires on-campus computer equipment and other instrumentation for detector simulation activities and construction and test of prototype modules. Advanced computer systems will be needed for analysis of the data sets coming from uniquely high luminosity collider running at SLAC, Fermilab, and LEP. It is anticipated that there will be other new efforts -- for example, Super Kamiokande (Japan), and MILAGRO (Los Alamos National Laboratory). Experiments for investigation of neutrino oscillation phenomena and for high intensity study of the properties of B mesons are under active consideration. Hardware for advanced accelerator concept experiments at the Advanced Test Facility at BNL and the ANL Wakefield Test Facility are included. Modest

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III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Universities and Other Laboratories (Cont'd)	fabrication and test of a polarized proton target use in the NEPTUN-A experiment (Russia). Capital equipment funds were provided to LBL for support of ongoing experiments at Fermilab and SLAC, for advanced detector prototypes, for equipment in support of superconducting magnet R&D, and for equipment in support of advanced accelerator R&D.	the superconducting R&D magnet work, advanced accelerator research and development studies and related test and support equipment. New non-accelerator experiments and upgrades to experiments at foreign accelerators will be undertaken only in cases with exceptional importance. The funding level will impact proposed new experiments and significant enhancements of existing detectors.	upgrades of components at the ZEUS collider detector at DESY and the LEP collider detectors at CERN are planned. Capital equipment funds are needed at LBL for equipment to support ongoing experiments at Fermilab and SLAC, equipment for advanced detector prototypes, for equipment in support of the superconducting magnet R&D, and advanced accelerator R&D.
	No LHC activity.	LHC activity at a low level and not separately identified.	Funding in the amount of $1,200,000 is also included for the initiation of collaborative activities with CERN on the LHC. This funding is requested in anticipation that a satisfactory agreement will be reached with CERN for significant U.S. participation in the LHC project. The funds would be used for test and fabrication equipment and R&D prototypes in support of the R&D activities described in the High Energy Technology section of this budget.
	$ 9,090	$ 9,256	$ 11,800
Brookhaven National Laboratory- General Purpose Equipment	Provides general purpose equipment for the entire laboratory.	Provides general purpose equipment for the entire laboratory. Includes purchase of massively parallel computer. ($1,000,000)	Provides general purpose equipment for the entire laboratory.
	$ 3,925	$ 3,925	$ 3,925
Capital Equipment	$ 60,100	$ 57,700	$ 63,230

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

HIGH ENERGY PHYSICS

I. Preface: Construction

II. A. Summary Table: Construction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Construction	$ 86,254	$ 109,736	$ 127,645	$ 17,909
Total, Construction	$ 86,254	$ 109,736	$ 127,645	$ 17,909

II. B. Laboratory and Facility Funding Table: Construction

Brookhaven National Lab	$ 8,425	$ 8,225	$ 7,595	$ -630
Fermi National Accelerator Lab	34,935	52,720	62,440	9,720
Stanford Linear Accelerator Center	42,894	48,791	57,610	8,819
Total, Construction	$ 86,254	$ 109,736	$ 127,645	$ 17,909

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Construction			
Construction	AIP funding was used to support continuing large need for modifications to maintain and improve the technical capability and operational efficiency of the accelerator complexes.	The level of effort for AIP is reduced relative to FY 1994, reflecting consideration of the laboratories changing needs.	The level of effort for AIP is reduced relative to FY 1995, reflecting consideration of the laboratories changing needs.
	GPP funding was used for small general purpose projects, e.g. roads, utilities, and environmental, safety, health and security needs.	GPP activity continues with about the same level of effort as in FY 1994.	The level of effort for GPP is increased relative to FY 1995 in order to provide for increased emphasis on ES&H concerns.
	The following paragraph describes FY 1994 activities supported by the Main Injector construction funding. Engineering design work on the civil construction was completed by mid-year. By year's end, about one quarter of the ring enclosure construction was complete, and beneficial occupancy of the largest service building was gained. About five percent of the dipole magnets were completely assembled and tested, and one of the nine 9000 ampere power supplies was completed. Fabrication work on most of the other major technical components began by the end of the fiscal year. At the end of FY 1994, the project was about 22% complete.	The following paragraph describes FY 1995 activities supported by the Main Injector construction funding. Civil construction work on the ring enclosure will continue with about three quarters of the ring enclosure completed. Emphasis will be on procurement of the dipole magnets and high-current power supplies. About one-third of the dipole magnets will be completed and tested and three of the high current power supplies will be operational. Fabrication of the remaining technical components will have started. The requested funding will provide for an additional 17% of the total project and at the end of FY 1995, the project will be about 34% complete.	The following paragraph describes FY 1996 activities supported by the Main Injector construction funding. Civil construction of the ring enclosure and service buildings will be completed and beneficial occupancy will be realized. Approximately 70% of the dipole magnets will be completed by the end of FY 1996, and the dipole power supplies, solid-state microwave drivers, 200-kW microwave amplifiers, magnet support stands, and ring vacuum pumps will all be in hand. By the end of FY 1996, about half of the technical components will be installed. The requested funding will provide for an additional 26% of the total project and at the end of FY 1996, the project will be about 60% complete.

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III. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction (Cont'd)	The following paragraph describes FY 1994 activities supported by the B-factory construction funding. FY 1994 is the first year of construction for the SLAC B-Factory. The project, an extensive upgrade of the PEP storage ring, includes the design, modification, fabrication, and assembly of storage ring components; there is no conventional construction. Prominent activities in FY 1994 include startup of most important engineering and design activities, clearing of PEP tunnel of existing equipment scheduled for refurbishing or not required for the B-Factory, and initiation of those long lead-time procurements that most seriously impact the project's critical schedule path. At the end of FY 1994, the project will be about 15% complete.	The following paragraph describes FY 1995 activities supported by the B-factory construction funding. Detailed engineering design will continue. Tunnel clearing will be complete and refurbishing of PEP components (particularly ring magnets for the high energy ring) will be in full swing. Fabrication of low energy ring magnets, and injection system components will begin. High energy ring magnet support and vacuum chamber components will be under construction. The requested funding will provide for an additional 25% of the project and at the end of FY 1995, the project will be about 40% complete.	The following paragraph describes FY 1996 activities supported by the B-factory construction funding. In FY 1996 most of the new magnets and vacuum system components for the high energy ring will be fabricated and installed, and all rf components will be in fabrication. Delivery and installation of magnets and vacuum elements for the low energy ring will also begin. The injector bypass beam lines and the system for extracting electrons from the linac, having been completed in FY 1995, will be tested in FY 1996, and all components will be completed for the positron extraction system and the beam lines connecting the bypass lines to the rings. The control system will be in final implementation and testing. At the end of FY 1996, the project will be about 65% complete.
	$ 86,254	$ 109,736	$ 127,645
Construction	$ 86,254	$ 109,736	$ 127,645

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IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unappropriated Balance
GPE-103	General Plant Projects, Various Locations	$ ---	$ ---	$ 12,149	$ 12,146	$ 13,845	$ ---
96-G-301	Accelerator Improvements and Modifications, Various Locations	9,800	---	---	---	9,800	---
94-G-304	B-Factory, Stanford Linear Accelerator Center	177,000	---	36,000	44,000	52,000	45,000
92-G-302	Fermilab Main Injector, Fermilab	229,600	26,650	25,000	43,000	52,000	82,950
Subtotal Line Item Projects		406,600	26,650	61,000	87,000	104,000	127,950
Total, High Energy Physics		$ ---	$ ---	$ 73,149	$ 99,146	$127,645	$ ---

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPE-103 General Plant Projects, Various locations — TEC: $13,845, TPC: $13,845

Start Date: 3rd. Qtr. FY 1996 — Completion Date: 2nd Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Obligations	Costs
1996	$13,845	$13,845	$4,465
1997	0	0	6,465
1998	0	0	2,915

3. Narrative: General Plant Projects provide for the many miscellaneous alterations, additions, modifications, replacements, and non-major construction required for general purpose, non-programmatic facilities at the Brookhaven National Laboratory, Fermi National Accelerator Laboratory and the Stanford Linear Accelerator Center facilities. High Energy Physics has the responsibility to provide funding for all GPP needs at BNL, Fermilab, and SLAC.

The FY 1996 General Plant Projects funding will also support high priority ES&H activities identified in the Department's ES&H Five Year Plan.

These projects are required for the general maintenance, modifications and improvement of the overall laboratory plant remediation of environmental problems and include minor new construction, capital alterations and additions, and improvements to buildings and utility systems. These are short-term projects whose timely accomplishment is essential for timely response to environmental and safety needs, maintaining the productivity, increasing the operational cost effectiveness, and ensuring that necessary support services are available to the research program.

A description and listing of examples of the major items of work to be performed at the various locations is contained in the Construction Project Data Sheet. Some of these may be located on non-government owned property. Following is a listing of the funding proposed for the various locations:

Brookhaven National Laboratory	$ 6,015
Fermi National Accelerator Laboratory	4,260
Stanford Linear Accelerator Center	3,570
Total Estimated Cost.....	$13,845

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request
Construction.....	XXXX	$12,149	$12,146	$13,845

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-G-301 Accelerator Improvements and Modifications, Various Locations

TEC: $ 9,800
TPC: $ 9,800

Start Date: 3rd. Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Obligations	Costs
1996	$ 9,800	$ 9,800	$ 2,300
1997	0	0	4,530
1998	0	0	2,970

3. Narrative: Accelerator Improvement projects provide for a variety of minor modifications, improvements and additions to the major high energy particle accelerators, colliding beam devices and experimental facilities. Funds of this type are necessary on an annual basis to maintain and improve the scientific effectiveness of these facilities as well as their operating reliability and cost effectiveness. The funds requested, which represent less than 1 percent of the present value of the government's investment in these facilities, produce a substantial return in terms of more cost effective operation and greater research productivity.

These projects are essential on an annual basis to maintain the short term operating efficiency and reliability, and the research flexibility of the high energy accelerators, colliding beam systems and related experimental facilities, thereby maintaining or enhancing their level of scientific effectiveness and productivity.

A description and listing of examples of the major items of work to be performed at the various locations is contained in the Construction Project Data Sheet. Some of these may be located on non-government owned property. Following is a listing of the funding proposed for the various locations:

Brookhaven National Laboratory	$ 1,580
Fermi National Accelerator Laboratory	6,180
Stanford Linear Accelerator Center	2,040
Total Estimated Cost.....	$ 9,800

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996
Construction.....	XXXX	$ 0	$ 0	$ 9,800

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-G-304, B-Factory
Stanford Linear Accelerator Center

TEC: $177,000
TPC: $293,200

Start Date: 1st. Qtr. FY 1994 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Obligations	Costs
1994	$ 36,000	$ 36,000	$ 13,385
1995	44,000	44,000	42,000
1996	52,000	52,000	50,000
1997	45,000	45,000	47,000
1998	0	0	24,615

3. Narrative: This project will provide two rings of magnets for storage of electrons at about 9 GeV and of positrons at about 3 GeV. The counter rotating beams of electrons and positrons will be brought into collision in an intersection area. A key element of the project will be the incorporation of design elements which will allow the very high collision luminosity required for effective studies of the B-meson system.

4. Total Project Funding (BA):

	Prior Years	FY 1995 Request	FY 1996 Request	To Complete
Construction.....	$36,000	$44,000	$52,000	$45,000
Capital Equipment.....	1,900	8,500	19,000	38,500
Operating Expenses.....	24,900	5,200	4,800	13,400

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-G-302 Fermilab Main Injector, Batavia, Illinois — TEC: $ 229,600; TPC: $ 259,300

Start Date: 3rd. Qtr. FY 1992 — Completion Date: 3rd. Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 15,000	- 3,350 a/	$ 11,650	$ 990
1993	15,000 b/		15,000	9,937
1994	25,000		25,000	27,318
1995	43,000		43,000	38,800
1996	52,000		52,000	48,400
1997	52,000		52,000	52,000
1998	30,950		30,950	36,300
1999	0		0	15,855

3. Narrative: This project provides for the construction of a new replacement accelerator to provide particles for injection into the existing Fermilab superconducting Tevatron accelerator, and also for direct delivery to the existing fixed target experimental and test beam areas.

The primary programmatic goal of this project is to greatly increase the luminosity delivered to the two existing collider detector facilities at Fermilab.

Purpose of this project is to greatly increase the data rate for the two existing Tevatron collider detector facilities, thereby enhancing significantly their efficiencies and physics research capabilities. This will in particular almost guarantee sufficient evidence to firmly establish the discovery at Fermilab of the top quark. (First evidence has recently been announced of discovery of the top quark, the last unobserved fundamental particle forming the basis of our current understanding of the structure of matter.)

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995 Request	FY 1996 Request	To Complete
Construction.....	$26,650	$25,000	$43,000	$52,000	$ 82,950
Capital Equipment.....	300	100	100	100	400
Operating Expenses.....	15,700	2,700	0	0	10,300

a/ Reflects Congressional Rescission of $3,350,000 in FY 1992.
b/ Congressional request for $30,000,000 changed to $15,000,000 by Congressional action on FY 1993 request.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH

OVERVIEW

NUCLEAR PHYSICS

The Nuclear Physics program of the Department of Energy (DOE) has the lead responsibility for Federal support of nuclear physics research and supports fundamental research activities under the mandate provided in Public Law 95-91 which established the Department. The programs intent is to be closely aligned with the Administration's science policies as put forward in "Science in the National Interest" and in the May 6, 1994, Gibbons and Panetta memo on FY 1996 R&D priorities. Specific new initiatives have been taken in the areas of intensified peer review, increased educational and diversity activities, strengthened international conduct of the science program, and support of additional areas for transfer of knowledge and technology to support the nation's economic base. The primary goal of the program is the conduct of fundamental research in order to understand the structure of atomic nuclei and the fundamental forces required to hold their constituents in place.

Science Facilities Utilization Enhancement: The Nuclear Physics request includes $25,000,000 to enhance the utilization of the Department's fundamental science and user facilities. This investment will significantly increase research time available to thousands of scientists in universities, Federal agencies, and U.S. companies. It will also leverage both Federally and privately sponsored research, consistent with the Administration's strategy for enhancing the U.S. National science investment.

The purpose of this targeted science initiative is to increase Nuclear Physics facility operations, instrumentation, and user support as part of a $100 million science initiative to increase the utilization of the Department's large state-of-the-art science facilities. The proposed funding increase for facilities will allow the Department to significantly increase the utilization and efficiency of operations of nearly all of its Nuclear Physics facilities. Approximately 20 percent of the additional funds will be administered directly to users through competitive grants.

The vitality of Nuclear Physics is dependent on continuous advancement of the fundamental understanding of the material and forces of nature. Over the years, many theoretical models have been developed to describe the structure of the nucleus and its behavior. These models have progressed from simple mechanical models of surface vibrations and rotations to sophisticated descriptions of meson-nucleon interactions. Scientists now know that nucleons (neutrons and protons, the constituents of the nucleus), are composed of smaller constituents called quarks. Based on the ways quarks are confined together in groups of three to make nucleons, or groups of two to make mesons, a more fundamental theory of the nuclear force called quantum chromodynamics (QCD) has been formulated. The incorporation of QCD concepts deepens our understanding of nuclear structure and interactions and provides significant new challenges to the experimental program.

Many of the characteristics and implications of the new QCD formulation of the nuclear force are addressed by the research programs both of nuclear physics and high energy physics. However, the Nuclear Physics program uniquely approaches problems by testing the theoretical predictions in the medium of extended nuclear matter provided by nuclei composed of many nucleons. Another subfield of Nuclear Physics addresses problems of mutual interest to nuclear physics and astrophysics, including measurements of supernovae, neutron stars, solar neutrinos, composition of cosmic rays, and stellar nuclear abundances. Of special current interest are measurements of the solar neutrino flux which permits the measurement of possible small neutrino masses. Relativistic heavy ion collisions create a quark-gluon plasma, which simulates a stage of evolution of the universe that ended ten millionths of a second after the initial "big bang", and will play an increasing role in the program.

Nuclear Physics activities are an essential component of the nation's scientific and technological base. Nuclear processes are responsible for the nature and abundances of all matter, which, in turn determines the essential physical characteristics of our universe. The science of nuclear physics has spawned many a variety of technologies such as nuclear medicine, nuclear power, nuclear fusion and nuclear weapons. These technologies have matured to the point where they now operate almost independently of the fundamental research program. Nevertheless, vital interactions still occur between the development of advanced concepts, in the transfer of improved theoretical models, in the common development of instrumentation, and in the need for more precise nuclear physics data in selected areas. Nuclear Physics accelerators have generated many of

the radioisotopes used for medical diagnoses and support several cooperative programs in biomedical research, space electronics testing, and atomic physics. They provide the framework for the training of Health Physicists who are dedicated to the maintenance of a radiation-free environment. Over one-half of the approximately 100 new PH.D. graduates produced each year in the DOE Nuclear Physics program will find careers in these areas. In addition, the Nuclear Data program within Nuclear Physics generates, evaluates, and disseminates information such as neutron cross-sections and radioactive decay data to support these programs.

The DOE Nuclear Physics program supports over 85 percent of the U.S. basic research program with the rest being supported by the National Science Foundation (NSF). Essential continuing guidance is provided to both agencies by the Nuclear Science Advisory Committee (NSAC) based on the 1989 Long Range Plan for Nuclear Science, and updated in 1994 by the report "Nuclear Science in DOE: Assessment and Promise". Through their joint support of NSAC, mutual interaction with the Division of Nuclear Physics of the American Physical Society, common sponsorship of workshops and conferences, and similar use of the peer review process, the DOE and NSF programs are mutually supportive and complementary. Although the NSF university program is almost as large as that of the DOE, the DOE program uniquely has the resources and managerial expertise to construct the large facilities and detectors available to the entire community. The university component of the DOE and NSF programs form the central core of the facility user activity. At CEBAF and MIT Bates, for example, roughly half of the experimental leaders are NSF supported, and the NSF has contributed substantially to major equipment at both laboratories.

The strategy of the program is to address the most pressing scientific questions in nuclear physics with new theories, equipment and facilities while maintaining an effective balance between competing and diverse program elements. Nuclear theory, design and fabrication of sophisticated detectors and the development and training of creative and skilled personnel are necessary for proper conduct of this research. High priority will be placed on new scientific areas in physics using electron beams, relativistic heavy ion research, studies of high spin states, experiments on quark interactions with nuclear matter, and solar neutrino research. Use of the Tandem/AGS high energy heavy ion beams at Brookhaven National Laboratory (BNL) using the recently completed booster for beams of gold ions and use of the new South Hall Ring experiment at the MIT Bates electron accelerator will be continued. In the Low Energy program, the Holifield Heavy Ion Research Facility will conduct a research program based on the existing accelerators which were reconfigured and upgraded to provide a Radioactive Ion Beam (RIB) Facility at Oak Ridge National Laboratory. Operation of national laboratory facilities at Argonne and Berkeley will continue within the Heavy Ion program. Detector projects include completion of the segmented gamma ray detector for nuclear structure physics (Gammasphere) at Berkeley and initial operation of the Sudbury Neutrino Observatory (SNO) project in cooperation with Canada and the United Kingdom. Permanent staffing at the National Institute for Nuclear Theory is completed, and a full program of basic research and study sessions on forefront topics in nuclear physics will be offered. Scientists supported by the Nuclear Physics program also carry out experiments and conduct research at NSF and High Energy Physics supported facilities and at foreign accelerator facilities . Central to the program are the construction, operation and maintenance of the accelerator facilities which provide the beams of particles with which the experiments are performed. In some areas of nuclear physics, questions are addressed at universities by accelerators dedicated to in-house research, or the smaller facilities located at national laboratories. However, newly emerging fundamental problems in nuclear science require large modern facilities that are designed for the research use of the entire nuclear community. The Continuous Electron Beam Accelerator Facility (CEBAF) construction project will be complete in FY 1995, with the completion of the CLAS detector in Hall B in FY 1996, the full research program can begin. Already, 325 physicists from 66 institutions have submitted 65 research proposals to the CEBAF. As the facility begins operation, physicists from 105 institutions, including 125 scientists from 17 foreign countries, will carry out experiments in FY 1996 approved by the peer review process. About 250 scientists from outside of CEBAF are actively participating in the design of experiments to be carried out in the three experimental halls. In FY 1995, the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory will enter its sixth year of construction, with procurement and installation of superconducting magnets as a major activity. The present research focus is on the involvement of the user community in equipment fabrication. The effort to design and fabricate detectors represents about 600 scientist and students from 70 universities and laboratories throughout the world. Two major detectors, STAR and PHENIX, have received approval from both scientific and technical review panels to begin design and construction, and international teams of scientists are working on each. Significant components of the detectors are being provided by collaborators from 12 foreign countries. Two smaller detectors are planned to address specialized scientific questions.

Current performance measures of program outputs for basic research include such metrics as the number of scientists supported, the number of students earning advanced degrees, the number of scientific publications in peer-reviewed journals, the number of awards from professional organizations, and the number of citations in scientific publications. Metrics for the transfer of new knowledge to a technology application include the number of cooperative agreements with industry, the number of projects attaining support from a DOE Energy Technology program, the

number of invention records and patents, and the number of industry users at scientific user facilities and the number of small business innovative research projects (SBIR) initiated. For construction projects, metrics can include cost and schedule milestones completed against approved project beamline. These performance measures are easily tabulated, commonly used, and begin to provide a framework for evaluating program efficiency. However, meaningful performance measures in basic science are more useful when described in qualitative, rather than quantitative terms. For example, in order to measure outcomes, or program effectiveness, the impact of the research outputs must be assessed in terms of the quality and impact of the new knowledge gained, its usefulness to technology development, and its longer-term benefit to society. Although there are limited and expensive methods for evaluating the quality of science through peer-review metrics, no metric exists that can accurately measure science's impact on technology and society.

To augment its normal peer review process, the Nuclear Physics program conducted a broad panel merit review of its entire research program including all National Laboratories and university research grants. Individual panelists on each of the five topically oriented panels evaluated each of the presentations made to the panel; followed a fixed format. A synthesis of these evaluations was made by a DOE official, checked for accuracy, and distributed to the presenter and appropriate program manager to be included in funding decisions. A report of the panel review discussing detailed procedures, statistical results, and programmatic overviews is available.

Performance Indicators for the Nuclear Physics program include the discovery of new scientific knowledge, number of scientists supported, accelerator beam hours available for research and percentage completion (cost and schedule milestones) against the approved project plans for CEBAF and RHIC. In FY 1994, the number of Ph.D.-level scientists supported by the program was 1051 plus 451 graduate students. In FY 1995 and FY 1996, the level is projected to be 1028 Ph.D.s, and 450 graduate students. Expected beam hours for research at accelerator user facilities is 16,700 hours in FY 1995, and 22,700 hours in FY 1996, including initial research capability at CEBAF and RIB. CEBAF construction will be complete in the 1st quarter of FY 1995 and operation for commissioning will begin. At the end of FY 1996, the RHIC project will be 66% complete.

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Nuclear Physics

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
Medium Energy Nuclear Physics	$108,269	$127,586	-$2,604	$124,982	$103,918
Heavy Ion Nuclear Physics	64,839	61,560	-386	61,174	66,800
Low Energy Nuclear Physics	23,541	24,760	-164	24,596	27,100
Nuclear Theory	14,648	14,735	-85	14,650	15,500
Capital Equipment	32,000	28,000	0	28,000	28,000
Construction	101,990	78,100	0	78,100	79,760
TOTAL	$345,287	$334,741	-$3,239	$331,502	$321,078
Summary					
Operating Expenses	$211,297	$228,641	-$3,239	$225,402	$213,318
Capital Equipment	32,000	28,000	0	28,000	28,000
Construction	101,990	78,100	0	78,100	79,760
Total Program	$345,287 a/	$334,741	-$3,239 b/	$331,502	$321,078
Staffing (FTEs)	(Reference General Science Program Direction)				

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977)

a/ Excludes $3,221,000 for the SBIR program and $107,000 for the STTR program which has been reprogrammed to Energy Supply R&D.
b/ Amount of General Reduction and Procurement Reform in Operating.

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(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Nuclear Physics

FY 1995 Appropriation	$ 334,741
- Adjustment	- 3,239
FY 1995 Adjusted	$ 331,502
Medium Energy Nuclear Physics	
- Initial full operation of CEBAF facility is supported as well as continued operation of Bates facility at MIT. Funds for operation of LAMPF are terminated with the transfer of operations to Defense Programs. High priority Nuclear Physics research continues	- 21,064
Heavy Ion Nuclear Physics	
- Conduct heavy ion research and operations with increase in operations for RHIC start-up activities and AGS operations	+ 5,626
Low Energy Nuclear Physics	
- Continue overall low energy operations and research and nuclear data program increase operations support for the Radioactive Ion Beam (RIB) project at ORNL	+ 2,504
Nuclear Theory	
- Concentrate effort in highest priority areas of nuclear physics with continued support of the Institute of Nuclear Theory	+ 850

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Capital Equipment

- Provide Nuclear Physics Instrumentation needed to complete the CLAS Detector at CEBAF, and experimental systems at ANL, BNL, LBL and ORNL	- 0

Construction

- Increase level of effort for AIP	+ 1,775
- Increased level of effort for GPP high priority ES&H activities	+ 885
- Completion of the Continuous Electron Beam Accelerator Facility (CEBAF) construction project funding in FY 1995	- 1,000
- Continue Relativistic Heavy Ion Collider (RHIC) construction project	0
FY 1996 OMB Budget Request	$ 321,078

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GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR PHYSICS

I. Preface: Medium Energy Nuclear Physics

The Nuclear Physics Program supports the basic research necessary to identify and understand the fundamental features of atomic nuclei and their interactions. The Medium Energy Nuclear Physics subprogram supports academic fundamental research, and operations and research at accelerator facilities with sufficient primary beam energy to produce pi mesons (pions) using projectiles no more massive than alpha particles. In addition, the subprogram supports research at accelerators operated by other DOE programs (e.g., High Energy Physics and Basic Energy Sciences) and at other unique domestic or foreign facilities. Two national accelerator facilities are now operated entirely under the Medium Energy subprogram - the Continuous Electron Beam Accelerator Facility (CEBAF) in Newport News, Virginia, operated by the Southeastern Universities Research Association, and the Bates Linear Accelerator Center in Middleton Massachusetts, operated by the Massachusetts Institute of Technology. These accelerator facilities serve a nationwide community of DOE- and NSF-supported scientists from over 100 American institutions, of which over 90% are universities. Both facilities provide major contributions to American education at all levels, and provide a wealth of new technical and innovative discoveries which result in important Technology Transfer and services to American industry and medicine. At the MIT/Bates laboratory, the NSF has made a major contribution to new experimental apparatus. A significant number of foreign scientists collaborate in the research programs of both facilities. The planned research program at the new CEBAF Laboratory, for example, involves 125 scientists from 17 foreign countries; 81 of these scientists are from CERN member states. At CEBAF, foreign collaborators have also made major investments in experimental equipment. The research programs supported at these facilities are ultimately aimed at achieving an understanding of the structure of the atomic nucleus in terms of its quark and gluon sub-structure, and of the "strong force" which holds the nucleus of the atom together. Research efforts include studies of the role of excited states of nucleons in nuclear structure, investigations of the role of specific quarks in nucleon structure, studies of parity violation, investigations of how the properties of a nucleon changes when imbedded in the nuclear medium, measurements of polarized particles and use of polarized beams to determine unique "structure factors" which pin down particular choices for nuclear structure, studies of short-distance correlations between nucleons in nuclei, and high resolution studies of the electric and magnetic structure of nuclei.

Due to a major restructuring of the Los Alamos National Laboratory (LANL) in FY 1994, all LANL FY 1996 Medium Energy Nuclear Physics funding is provided to P Division under the Research Program activity. In FY 1996, primary operation of the Clinton P. Anderson Meson Physics Facility (LAMPF) will be supported by Defense Programs. On this basis, Nuclear Physics funding permits selected high priority Nuclear Physics experiments at LAMPF.

II. A. Summary Table: Medium Energy Nuclear Physics

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Research				
CEBAF	$ 10,330	$ 8,466	$ 9,000	$ 534
MIT/Bates	3,766	3,450	3,918	468
National Laboratories	15,216	19,942	16,924	-3,018
Universities	11,867	11,420	12,676	1,256
Subtotal, Research	$ 41,179	$ 43,278	$ 42,518	$ -760
Operations				
LAMPF	$ 23,640	$ 23,344	$ 0	$ -23,344
Bates	10,400	9,760	10,900	1,140
CEBAF	33,050	48,600	50,500	1,900
Other	0	0	0	0
Subtotal, Operations	$ 67,090	$ 81,704	$ 61,400	$ -20,304
Total, Medium Energy Nuclear Physics	$ 108,269	$ 124,982	$ 103,918	$ -21,064

II. B. Laboratory and Facility Funding Table: Medium Energy Nuclear Physics

Argonne National Lab (East)	$ 2,896	$ 2,660	$ 3,100	$ 440
Brookhaven National Lab	2,090	1,930	2,180	250
Continuous Electron Beam Accelerator Facility	43,380	57,066	59,500	2,434
Los Alamos National Laboratory	33,870	36,154	8,543	-27,611
All Other	26,033	27,172	30,595	3,423
Total, Medium Energy Nuclear Physics	$ 108,269	$ 124,982	$ 103,918	$ -21,064

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Medium Energy Nuclear Physics			
Research			
CEBAF	Utilized data acquisition system for testing of components and systems during accelerator assembly. Brought computer system up to full capability for automated operation and querying of the thousands of inputs monitored for proper operation of the entire facility. Established the on-line data acquisition capability for automated collection and analysis of data from experiments. Hall C data acquisition and slow controls system was completed.	The Hall A data acquisition and slow controls system will be completed. The central data replay resources will be upgraded to match the data output of Hall C and the start-up activities in Hall A. Data reduction analysis software and data bases will be supported.	The Hall A data acquisition and slow controls system are completed. The central data replay resources will be available for HALL C and Hall A activities. Preparation for Hall B data acquisition is underway.
	Assembled and tested experimental equipment components. Emphasis is on completion of Hall C and Hall A detectors to be ready for data taking upon completion of commissioning of the accelerator in early 1995. The CLAS detector in Hall B will be completed as soon as possible thereafter. In FY 1994, at an intermediate stage of commissioning, the beam was brought into Hall C. Hall C equipment will be used to commence the CEBAF experimental research program.	Complete installation of Hall A spectrometer pair and detector packages. Complete installation and testing of beam lines, control systems, data acquisition systems, safety and environmental systems, and other support equipment. Complete final preparations for beginning of physics operations by 4th quarter, FY 1995.	Experimental equipment in Halls C and A is complete. Hall A spectrometer pair will be calibrated and available for experimental research. Hall B detector installation will be completed and calibration activities will be initiated.
	Continued superconducting RF research and technology development activities and strengthened theoretical efforts. CEBAF scientific staff is now almost completely involved in preparation for the CEBAF research program.	Continue superconducting RF research and technology development activities. Theoretical efforts will be supported by the Nuclear Theory Program.	Continue superconducting RF research and technology development activities. Theoretical efforts will be supported by the Nuclear Theory Program.

III. Medium Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
CEBAF (Cont'd)	Participation in outside experiments by CEBAF staff at facilities such as the MIT/Bates Linear Accelerator Center, the Stanford Linear Accelerator Center, and NIKHEF in the Netherlands, was limited due to pressures of completing CEBAF experimental equipment. Plan for CEBAF research program established through Program Advisory Committee composed of peer experts and users group meetings.	Carry out research in Experimental Hall C. In 4th quarter FY 1995, shake-down for initial operation of Experimental Hall A twin spectrometers will begin.	Carry out research program in Experimental Halls C and A. Complete and begin initial operation of Experimental Hall B detector system. Proposed experiments will be evaluated by a peer review panel called the Program Advisory Committee.
	$ 10,330	$ 8,466	$ 9,000
MIT/Bates	In the South Experimental Hall, carried out coincidence measurements with higher intensity polarized electron beams. Began testing the new South Hall Ring (SHR). Emphasized measurement of spin observables utilizing the new OHIPS focal plane polarimeter. Carried out measurements "out of the scattering plane" with new detection systems (OOPS) jointly funded with the National Science Foundation (NSF) through the University of Illinois. An important experiment will be a measurement of the charge form factor of the neutron.	Continue coincidence measurements with higher intensity polarized electron beams. Perform experiments with the new South Hall Ring (SHR). Emphasize measurement of spin observables utilizing the new OHIPS focal plane polarimeter. Carry out measurements "out of the scattering plane" with new detection systems (OOPS) jointly funded with the National Science Foundation (NSF) through the University of Illinois. Begin phasing in experiments with the SHR polarized internal targets.	Continue coincidence measurements with higher intensity polarized electron beams. Perform experiments with the new South Hall Ring (SHR). Emphasize measurement of spin observables utilizing the new OHIPS focal plane polarimeter. Carry out measurements "out of the scattering plane" with new detection systems (OOPS) jointly funded with the National Science Foundation (NSF) through the University of Illinois. Begin phasing in experiments with the SHR polarized internal targets.
	In the North Hall, began to carry out data taking for the SAMPLE experiment to measure parity violation in elastic scattering from the proton. Used high resolution ELSSY spectrometer for measurements of high q magnetic scattering from He-3, and nuclear structure studies of the neon isotopes.	Continue high precision measurements with the ELSSY spectrometer and the SAMPLE experiment in the North Hall.	In the North Hall, continue high precision measurements with the ELSSY spectrometer. Extend the joint DOE/NSF SAMPLE experiment to carry out measurements on deuterium.

III. Medium Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
MIT/Bates (Cont'd)	Continued R&D on behavior of polarized beams in stretcher rings, and on design of detector components for use in the South Hall. Designed a polarimeter capability internal to the SHR. Designed detection capability for use with internal targets and the cw beam available in the South Hall.	Improve internal polarimeter capability and new experimental detection capabilities for use with new internal target and high current cw beam available in the South Hall Pulse Stretcher Ring.	Utilize internal polarimeter capability and new experimental detection capabilities for use with internal target and high current cw beam available in the South Hall Pulse Stretcher Ring.
	Carried out a program of research at other existing facilities including LAMPF, CEBAF, the Paul Scherrer Institute in Switzerland, and HERA in Germany.	Carry out a program of research at other existing facilities including LAMPF, CEBAF, the Paul Scherrer Institute in Switzerland, and HERA in Germany.	Carry out a program of research at other existing facilities including CEBAF, the Paul Scherrer Institute in Switzerland, and HERA in Germany.
	Included $120,000 for a computer lease for the Laboratory for Nuclear Science Computer Facility Upgrade.	Include $120,000 for a computer lease for the Laboratory for Nuclear Science Computer Facility Upgrade.	Include $120,000 for a computer lease for the Laboratory for Nuclear Science Computer Facility Upgrade.
	$ 3,766	$ 3,450	$ 3,918
National Laboratories	At Brookhaven National Laboratory (BNL), continued analysis of H-particle data from first experiment. Began data accumulation on the second phase H-particle experiment which examines a different mass region. Commenced experiment to measure double-lambda hypernuclei. Continued construction and testing of drift chambers for SOS spectrometer at CEBAF.	Continue data accumulation on the second phase H-particle search experiment and the measurement of double-lambda hypernuclei. CEBAF SOS drift chambers are complete and installed. Plan for commencement of strangeness production experiment at CEBAF.	Continue hadron physics program using the AGS at BNL and commence strangeness production experiment at CEBAF.

III. Medium Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
National Laboratories (Cont'd)	At BNL, utilized the LEGS Facility. Carried out a broad experimental program of polarized photon scattering looking primarily at few-nucleon targets, and concentrating on measurements of the nuclear tensor force, and polarization observables. Continued experimental program, and begin studies of hadron polarizabilities, particularly of the proton and the pion. Planned new experimental efforts using the crystal box spectrometer and End Cap upgrade.	Utilize the LEGS facility. Carry out a broad experimental program of polarized photon scattering looking primarily at few-nucleon targets, and concentrating on measurements of the nuclear tensor force, and polarization observables. Begin new experimental efforts using the crystal box spectrometer and End Cap upgrade. Plan for a new polarized H-D ice target.	Utilize the LEGS facility. Carry out a broad experimental program of polarized photon scattering looking primarily at few-nucleon targets, and concentrating on measurements of the nuclear tensor force, and polarization observables. Carry out experimental efforts using the crystal box spectrometer and End Cap upgrade, and the new polarized ice H-D target in collaboration with other U.S. and Italian scientists.
	At Argonne National Laboratory (ANL), a program of research was carried out concentrating on the interactions of nuclear constituents and the manner in which they are modified in nuclei. Research was carried out at a number of facilities including Fermilab, SLAC, the VEPP-3 electron storage ring in Russia, HERA in Germany, and CEBAF. Construction of the CEBAF SOS spectrometer was completed and components of an initial detector system was installed. Phase three experiment to measure the tensor force in electron deuteron scattering at VEPP-3 is underway. New initial results from the Fermilab muon scattering experiment are available. Initial data using CEBAF Hall C spectrometers have been taken.	Plan for commencement of full program of research at CEBAF. Complete work on a cryogenic He-3 target for use in a number of Hall C experiments at CEBAF. Carry out phase three experiment at VEPP-3. Begin measurements on spin structure function of the nucleon in the HERA electron ring. Prototype new tritium target for use at CEBAF.	Carry out full program of research at CEBAF. Build and use a new tritium target for experiments at CEBAF. Phase three experiment at VEPP-3, at the Russian Novosibirsk laboratory, will be completed. Carry out measurements on spin structure function of the nucleon in the HERA electron ring. Carry out measurements at Fermilab on antiquark distributions in the proton using the Dress-Tan process.

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III. Medium Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
National Laboratories (Cont'd)	At Los Alamos National Laboratory (LANL), a program of research was carried out concentrating on examination of nuclear phenomena at high energies. Work concentrates on achieving an understanding of nuclear behavior at the quark-gluon level. Research is carried out primarily at Fermilab, and concepts are being developed to establish a future research program at the AGS, and using the PHENIX detector to be built at RHIC at Brookhaven National Laboratory. Continued to analyze Fermilab experiment on two prong decays of B and D mesons, and continued to prepare for new Drell-Yan measurements at Fermilab. Continue planning for future use of the PHENIX detector at RHIC for p-N studies.	Prepare for PHENIX detector activities utilizing the proton capability at RHIC, which involve emphasis on the muon subsystem and the overall trigger and data acquisition systems. Begin to carry out Drell-Yan measurements at Fermilab which will yield crucial results on whether the anti-quark asymmetry in the proton is the source of an apparent violation of a sum rule seen in deep inelastic scattering experiments.	Prepare for PHENIX detector activities utilizing the proton capability at RHIC, which involve emphasis on the muon subsystem and the overall trigger and data acquisition systems. Carry out Drell-Yan measurements at Fermilab which will yield crucial results on whether the anti-quark asymmetry in the proton is the source of an apparent violation of a sum rule seen in deep inelastic scattering experiments.
	At LAMPF, high priority experiments were supported such as the rare muon decay search (MEGA), a search for neutrino oscillations using the new LSND detector, and experiments using the new neutral meson spectrometer (NMS).	High priority experiments continue to be supported such as the rare muon decay search (MEGA), a search for neutrino interactions using the new LSND detector, and experiments using the new neutral meson spectrometer (NMS).	The Department is proposing defense uses for LAMPF and is requesting nuclear weapons research and development funds to continue operations of the facility. In this event, activity would be directed to high priority physics research such as the program of parity and time reversal violation studies using epithermal neutron scattering at the LANSCE facility. Highest priority experiments, such as MEGA, LSND, use of the NMS, will continue to completion as feasible. Continue analysis of completed LAMPF experiments. Ensure integrity of valuable and reusable government equipment as research emphasis shifts from LAMPF to other facilities.

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III. Medium Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
National Laboratories (Cont'd)	Funding in the amount of $614,000 and $107,000 has been transferred to the SBIR program and the STTR program, respectively.	Funding in the amount of $1,833,000 and $225,000 has been budgeted for the SBIR program and the STTR program, respectively.	Funding in the amount of $2,100,000 and $320,000 has been budgeted for the SBIR program and the STTR program, respectively.
	$ 15,216	$ 19,942	$ 16,924
Universities	Supported a broad program of university research in Nuclear Physics utilizing not only accelerator facilities supported under the Medium Energy Program, but also using other U.S. and international accelerator laboratories. Also supported non-accelerator based research at a number of international sites where major detector systems have been assembled to examine fundamental physical laws such as searches for neutrino oscillations and double beta decay. Identified and supported high quality nuclear physics research efforts at minority institutions, such as Hampton University and Norfolk State University.	Support a broad program of university research in Nuclear Physics utilizing not only accelerator facilities supported under the Medium Energy Program, but also using other U.S.and international accelerator laboratories. Also support non-accelerator based research at a number of international sites where major detector systems have been assembled to examine fundamental physical laws such as searches for neutrino oscillations and double beta decay. Identify and support high quality nuclear physics research efforts at minority institutions, such as Hampton University and Norfolk State University.	Support a broad program of university research in Nuclear Physics utilizing not only accelerator facilities supported under the Medium Energy Program, but also using other U.S.and international accelerator laboratories. Also support non-accelerator based research at a number of international sites where major detector systems have been assembled to examine fundamental physical laws such as searches for neutrino oscillations and double beta decay. Identify and support high quality nuclear physics research efforts at minority institutions, such as Hampton University and Norfolk State University.
	Conducted program of selected nuclear physics experiments at other facilities including Fermilab, SLAC, TRIUMF (Canada), Saclay (France), PSI (Switzerland), VEPP-3 (Russia), and NIKHEF (Netherlands).	Conduct program of selected nuclear physics experiments at other facilities including Fermilab, SLAC, TRIUMF (Canada), Saclay (France), PSI (Switzerland), VEPP-3 (Russia), and NIKHEF (Netherlands).	Conduct program of selected nuclear physics experiments at other facilities including Fermilab, SLAC, TRIUMF (Canada), Saclay (France), PSI (Switzerland), VEPP-3 (Russia), and NIKHEF (Netherlands).
	$ 11,867	$ 11,420	$ 12,676
Subtotal, Research	$ 41,179	$ 43,278	$ 42,518

III. Medium Energy Nuclear Physics (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operations			
LAMPF	Operated accelerator and facilities about 1900 hours for nuclear physics research with about seven secondary beams operating simultaneously. Provided beam for approximately 20 nuclear physics experiments involving about 180 scientists.	Operate accelerator and facilities about 2200 hours for nuclear physics research with a reduced number of secondary beams operating simultaneously. Provide beam for approximately 20 nuclear physics experiments involving about 180 scientists. The request also provides for preparation for decontamination and decommissioning of selected beam lines.	No activity.
	$ 23,640	$ 23,344	$ 0
Bates	Operated accelerator and facilities about 2000 hours for nuclear physics research. Began testing the new cw internal target facility on South Hall Ring, and developed extracted electron beam capability.	Operate accelerator and facilities about 2000 hours for nuclear physics research. Utilize the new internal target facility in the South Hall Ring and the cw extracted beams for the experimental nuclear physics program.	Operate accelerator and facilities for about 3000 hours for nuclear physics research. Utilize the new internal target facility in the South Hall Ring and the cw extracted beams for the experimental nuclear physics program.
	Provided beam for approximately 10 experiments involving about 100 scientists.	Provide beam for approximately 10 experiments involving about 100 scientists.	Provide beam for approximately 15 experiments involving about 150 scientists.
	Operated accelerator at 1 GeV for required experiments during selected operating cycles during the year. Routinely injected electron beam into the SHR and operate with circulating electron beams.	Operate accelerator at 1 GeV for required experiments during selected operating cycles during the year. Routinely inject electron beam into the SHR and operate with circulating electron beams. Extract external cw electron beams for experiments. Operate SHR with internal polarimeter capability.	Operate accelerator at 1 GeV for required experiments during selected operating cycles during the year. Routinely inject electron beam into the SHR and operate with circulating electron beams. Extract external cw electron beams for experiments. Operate SHR with internal polarimeter capability.
	Continued commissioning of the SHRE.	Complete commissioning of the SHRE.	No activity.
	$ 10,400	$ 9,760	$ 10,900

III. Medium Energy Nuclear Physics (Cont'd):
Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
CEBAF	Continued final assembly and commissioning of entire accelerator facility and the beam switchyard which channels the electron beam to the three experimental halls. Brought initial beam into Hall C for testing of experimental apparatus. North and South Linac commissioning was completed. Central Helium Liquefier commissioning was completed. Beam was delivered at 800 MeV to Hall C for start of experimental equipment commissioning.	Complete final assembly and continue commissioning of entire accelerator facility and the beam switchyard which channels the electron beam to the three experimental halls. Make transition from commissioning to operational stage. Achieve 5-pass beam operation and a beam energy of 4 GeV. Establish capability to deliver beam to the three experimental halls simultaneously.	Facility is complete.
	Provided partial support for startup of laboratory operations and accelerator commissioning. Operated and tested major sections of the full injector and the North and South Linacs along with associated systems such as the Central Helium Refrigerator, RF system, safety systems, beam monitors, and computer controls. Began testing and operation of experimental equipment. Commenced initial experimental research operations in Hall C.	Commence laboratory operations. Continue initial experimental research tests in Hall C and commence testing for initial research operations in Hall A. Operations funding is provided to support commissioning of the accelerator facility and initiation of experimental research. The facility will operate about 15 weeks for research.	Operate the completed CEBAF accelerator facility for the research program in Halls A and C. Provide commissioning beam to Hall B for calibration of new CLAS detector system. Operate 35 weeks for research.
	$ 33,050	$ 48,600	$ 50,500
Other	$ 0	$ 0	$ 0
Subtotal, Operations	$ 67,090	$ 81,704	$ 61,400
Medium Energy Nuclear Physics	$ 108,269	$ 124,982	$ 103,918

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR PHYSICS

I. Preface: Heavy Ion Nuclear Physics

The Heavy Ion Nuclear Physics subprogram supports peer-reviewed research directed at understanding the behavior and properties of atomic nuclei and nuclear matter over an ever increasing range of energy, density and deformation conditions. These conditions are created in nucleus-nucleus collisions induced by beams of heavy ions. Sophisticated accelerators located at a three universities (Texas A&M, Yale, University of Washington) and four national laboratories (Argonne, Brookhaven, Oak Ridge, and Lawrence Berkeley) are supported and improved by the Nuclear Physics Program to provide the heavy ion beams necessary for these studies. The national laboratory facilities are utilized by Department of Energy (DOE), National Science Foundation (NSF), and foreign supported researchers whose experiments undergo peer-review by Program Advisory Committees prior to approval for beam time. Heavy Ion Nuclear Physics supported researchers also use NSF and foreign accelerator facilities for their studies. At low bombarding energies, studies include the high spin behavior of cool nuclear matter leading to severe deformation and eventually fission. Especially intriguing are close encounters of the heaviest nuclei which lead to unexplained spontaneous electron and positron production. The nuclear dynamics of complex phenomena including the evolution of the compound nucleus, deep-inelastic scattering and projectile multifragmentation are studied at intermediate bombarding energies. Radioactive beams are produced to study properties of exotic nuclei out to the very limits of stability. At higher energies, exploration is made of the nuclear matter equation of state for hot dense nuclear matter and the deconfinement of hadronic matter into a quark-gluon plasma.

II. A. Summary Table: Heavy Ion Nuclear Physics

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Research				
LBL Relativistic Heavy Ion Research	$ 4,750	$ 4,755	$ 4,865	$ 110
BNL Relativistic Heavy Ion Research	9,249	8,610	6,405	-2,205
National Laboratory Research	14,055	14,126	14,395	269
University Research	11,065	12,528	13,570	1,042
Subtotal, Research	$ 39,119	$ 40,019	$ 39,235	$ -784
Operations				
LBL Accelerator R&D	$ 5,850	$ 1,545	$ 1,735	$ 190
BNL Tandem/AGS Operations	9,020	8,690	13,775	5,085
University Accelerator Operations	2,580	2,560	2,555	-5
Other Operations (including ANL and LBL)	8,270	8,360	9,500	1,140
Subtotal, Operations	$ 25,720	$ 21,155	$ 27,565	$ 6,410
Total, Heavy Ion Nuclear Physics	$ 64,839	$ 61,174	$ 66,800	$ 5,626

II. B. Laboratory and Facility Funding Table: Heavy Ion Nuclear Physics

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 9,340	$ 9,510	$ 10,425	$ 915
Brookhaven National Lab	18,269	17,300	20,180	2,880
Lawrence Berkeley Lab	18,555	14,405	15,330	925
Lawrence Livermore National Lab	250	229	290	61
Los Alamos National Laboratory	1,040	990	1,090	100
Oak Ridge National Lab	3,510	2,110	2,300	190
All Other	13,875	16,630	17,185	555
Total, Heavy Ion Nuclear Physics	$ 64,839	$ 61,174	$ 66,800	$ 5,626

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Heavy Ion Nuclear Physics			
Research			
LBL Relativistic Heavy Ion Research	Conducted a research program consistent with the FY 1993 phaseout of Bevalac Operations. Worked on analysis of Bevalac data, with emphasis on the important data obtained with the Time Projection Chamber (TPC) and DiLepton Spectrometer (DLS) detector systems. Continued involvement in the CERN NA35/NA49 experiment by developing TPC electronics for the FY 1994 Lead (Pb) beam run. Improved support for the core group which provides leadership for the STAR detector at RHIC.	Continue research program focussed on studying the properties of hot, dense nuclear matter produced in relativistic heavy ion collisions. Analysis of data taken in measurements with the DLS and TPC at the Bevalac will be completed. First data will be obtained from the fully instrumented NA49 experiment at CERN, and participation in experiments at the AGS at BNL will continue. Increased effort will be expended for support of the construction of the STAR detector at RHIC. R&D activities on detector instrumentation will continue to be pursued.	Research program will continue to focus on the study of the properties of hot, dense nuclear matter produced in relativistic heavy ion collisions. Analysis of data taken in CERN Pb beam experiment NA49 will be performed. Continued participation in BNL AGS experiments is anticipated. Effort will continue in providing leadership and management in the construction of the STAR detector for RHIC. Detector R&D activities will continue.
	$ 4,750	$ 4,755	$ 4,865

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III. Heavy Ion Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
BNL Relativistic Heavy Ion Research	Continued relativistic heavy ion program at the BNL/AGS to investigate energy flow, nuclear stopping, strangeness and anti-particle production, and spatial-time evolution of reaction dynamics with Gold (Au) beams. Continued R&D directed at RHIC accelerator and detector projects at the level of $5,880,000. Increased support for efforts directed towards designing and implementing experiments at RHIC.	Continue fundamental research program studying energy flow, nuclear stopping, strangeness and anti-particle production, and spatial-time evolution of reaction dynamics with Gold (Au) beams in experiments E864, E866, E877, and E891 at the AGS/BNL. Continue R&D activities which include RHIC R&D at the level of $3,620,000. Increased effort will be devoted to construction of the PHENIX and STAR detectors for RHIC.	Fundamental research program studying energy flow, nuclear stopping, strangeness and antiparticle production, and spatial-time evolution of reaction dynamics with Au beams in experiments E864, E866, E877, and E891 at BNL will continue. R&D activities directed at RHIC detectors and instrumentation will continue to be pursued. Increased effort will be devoted to construction of the PHENIX, PHOBOS, and STAR detectors for RHIC.
	$ 9,249	$ 8,610	$ 6,405
National Laboratory Research	At ANL, continued the ATLAS heavy ion program with emphasis on those studies exploiting the unique beam capabilities and instrumentation at that facility, in particular the measurements being performed with the Fragment Mass Analyzer (FMA) and ATLAS Positron Experiment (APEX) detector systems. Continued gamma-ray high-spin spectroscopy program both at ATLAS and with Gammasphere at LBL. Continued R&D activities directed at low-frequency superconducting RF cavities.	At ANL, continue fundamental research studies exploiting the unique massive heavy-ion beam capabilities and instrumentation at ATLAS, and in particular the measurements being performed with the FMA and APEX detector systems. Continue gamma-ray high-spin spectroscopy program both at ATLAS and with Gammasphere at LBL. Continue R&D activities on superconducting RF cavities.	At ANL, fundamental research studies exploiting the unique massive heavy-ion beam capabilities and instrumentation at ATLAS will continue, including the measurements performed with the FMA and APEX detector systems. The gamma-ray high-spin spectroscopy program both at ATLAS and with Gammasphere at LBL will continue. R&D activities on superconducting RF cavities will continue. Continue and enhance the educational efforts directed at minority institutions.
	At LBL, continued the experimental program at the 88" cyclotron, including the high spin and transuranic nuclei studies. Continued measurements with the early implementation phase of Gammasphere to address physics questions of high priority. Emphasis was placed on providing the needed support to assure timely completion of Gammasphere. Continued intermediate energy studies of reaction mechanisms.	At LBL, continue research at the 88" cyclotron, including the high spin and transuranic nuclei studies. Particular emphasis will be placed on the studies being performed with the Gammasphere detector array, and on the development of the auxiliary detectors and computer systems needed to exploit this powerful detector for addressing the highest priority physics. Work will continue on studies of reaction mechanisms at intermediate energies.	At LBL, research at the 88" cyclotron, including the high spin and transuranic nuclei studies, will be pursued with particular emphasis on using the Gammasphere detector array to address the highest priority physics. Continued development of auxiliary detectors and the computer system needed to exploit this powerful detector will be supported. Work will continue on studies of reaction mechanisms at intermediate energies.

III. Heavy Ion Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
National Laboratory Research (Cont'd)	At ORNL, continued the experimental program directed at nuclear structure with emphasis on utilization of large detector arrays, such as Gammasphere and studies with Radioactive Ion Beams (RIB's). Continued reaction mechanism study activities and in particular the measurements of energetic photons from highly excited nuclei. Continued relativistic heavy ion program by participation in the WA98 experiment at CERN using Lead (Pb) beams in FY 1994, and continuing R&D work and planning for the PHENIX detector at RHIC.	At ORNL, continue the research program which includes: nuclear structure studies with emphasis on use of large detector arrays, such as Gammasphere; reaction mechanism studies, in particular the measurements of energetic photons from excited nuclei, and relativistic heavy ion studies at CERN with Lead (Pb) beams in Experiment WA98. Continue activities directed toward construction of the PHENIX detector for RHIC, which includes significant R&D.	At ORNL, a research program will be pursued which includes: reaction mechanism studies, in particular the measurements of the energetic photons emitted from highly excited nuclei, and relativistic heavy ion studies at CERN with Lead (Pb) beams in Experiment WA98. Activities directed towards construction of the PHENIX detector for RHIC will continue to have high priority.
	At LANL, continued involvement in the NA44 experiment at CERN, participating in data taking with Lead (Pb) beams in FY 1994 and in the analysis of previous data taken with sulfur and proton beams. Enhanced R&D and planning activities associated with the PHENIX detector for RHIC.	At LANL, continue fundamental research studies at CERN with Lead (Pb) beams in Experiment NA44, and analyses of previous data taken with Silicon and proton beams. Continue activities associated with R&D and construction of the PHENIX detector for RHIC.	At LANL, fundamental research studies of hot, dense nuclear matter at CERN with Pb beams in Experiment NA44 will continue. Increased effort will be focussed on activities associated with construction of the PHENIX detector for RHIC.
	At LLNL, continued participation in the E866 experiment at the BNL/AGS using Gold (Au) beams in FY 1994, and in the efforts on R&D and planning for the PHENIX detector for RHIC. Continued efforts directed at nuclear structure studies with Gammasphere.	At LLNL, continue research studies at the BNL/AGS with Gold (Au) beams in Experiment E866, and in the analysis of data taken in E859. Continue efforts directed towards construction of the PHENIX detector for RHIC. Continue efforts directed at nuclear structure studies with Gammasphere.	At LLNL, involvement at BNL/AGS in measurements with Au beams in Experiment E866, studying the properties of hot, dense nuclear matter, will continue. Efforts directed towards construction of the PHENIX detector for RHIC will continue. The research effort directed at nuclear structure studies with Gammasphere will continue.
	$ 14,055	$ 14,126	$ 14,395

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III. Heavy Ion Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
University Research	Continued strengthening university user research at national laboratory facilities where unique instrumentation, such as Gammasphere, and beams, such as relativistic heavy ions at the AGS, exist. At the upgraded university accelerators at Yale, University of Washington, and Texas A&M, the research program continued to carry out studies which are appropriate for the facility and which exploit the inherent strengths of each facility for research and education. Emphasis continued to be placed on the utilization of detector systems acquired and on improving the instrumentation available.	Continue strengthening university user fundamental research at national laboratory facilities where unique instrumentation, such as Gammasphere, and beams, such as relativistic heavy ions at the AGS, exist. At the upgraded university accelerators at Yale, University of Washington, and Texas A&M, the research program will continue to carry out studies which are appropriate for and which exploit the inherent strengths of each facility for research and education. Continue emphasis on the utilization of the detector systems acquired and on improving the instrumentation available to address forefront nuclear physics topics. Education of students continues to be of high priority in this activity.	University researchers will continue to utilize national laboratory facilities where unique instrumentation, such as Gammasphere, and beams, such as relativistic heavy ions at the AGS, exist. Researchers at university accelerator facilities will continue to focus on studies appropriate for and which exploit the inherent strengths of each facility for research and education. At Texas A&M, continue project measuring radiation hardness of micro-electronics jointly with McDonnell-Douglas and Prairie View A&M. Continued emphasis will be placed on development and use of novel instrumentation. Education of students continues to be of high priority in this activity.
	Funding in the amount of $1,000,000 has been transferred to the SBIR program.	Funding in the amount of $1,410,000 has been budgeted for the SBIR program.	Funding in the amount of $900,000 has been budgeted for the SBIR program.
	$ 11,065	$ 12,528	$ 13,570
Subtotal, Research	$ 39,119	$ 40,019	$ 39,235

III. Heavy Ion Nuclear Physics (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operations			
LBL Accelerator R&D	Funds at the level of $3,920,000 were provided for activities in preparation of decommissioning of the Bevalac facility. Funds were provided for continued R&D activities in support of the Nuclear Physics program.	Funds are provided for activities to complete preparation for decommissioning of the Bevalac facility, and for R&D activities in support of the Nuclear Physics program.	Funds are provided for Bevalac facility closure activities and for accelerator R&D activities in support of the Nuclear Physics program.
	$ 5,850	$ 1,545	$ 1,735
BNL Tandem/AGS Operations	Conducted operations of Tandem/Booster/GAS accelerator facility to provide at least 6 weeks of Gold (Au) beams for an experimental program. Provided support for implementation of gold beam experiments. Supported RHIC test beam activities.	Conduct operations of Tandem/Booster/AGS accelerator facility so as to provide at least 4 weeks of Gold (Au) beams for an experimental program. Provide support for implementation and execution of Au beam experiments. Begin RHIC start-up activities for testing accelerator components at the level of $2,200,000 and support RHIC test beam activities.	The Tandem/Booster/AGS accelerator complex will be operated for 12 weeks of Gold (Au) beams for an experimental program. Support will be provided for implementation and execution of Au beam experiments and for RHIC test beams. Funds at the level of $6,000,000 are provided for RHIC start-up activities, including testing of components, and for the procurement of component spares.
	$ 9,020	$ 8,690	$ 13,775
University Accelerator Operations	At the Yale tandem facility, provided light heavy-ion beams for nuclear structure, astrophysics, and fundamental interaction studies. Fully supported the Texas A&M superconducting cyclotron, with use of the Electron Cyclotron Resonance (ECR) ion source to produce heavy ion beams at low to intermediate energies for a program focussing on the properties of excited nuclei, fundamental interactions, and astrophysics.	The Yale tandem facility will provide beams for conduct of nuclear structure, astrophysics, and fundamental interaction studies. At Texas A&M, the superconducting cyclotron will provide heavy ion beams at low to intermediate energies for a fundamental research program studying the properties of excited nuclei, fundamental interaction, and astrophysics.	The Yale tandem facility will provide beams for conduct of nuclear structure, astrophysics, and fundamental interaction studies. At the Texas A&M, the superconducting cyclotron will provide heavy ion beams at low to intermediate energies for a program studying the properties of excited nuclei, fundamental interaction, and astrophysics.
	$ 2,580	$ 2,560	$ 2,555

III. Heavy Ion Nuclear Physics (Cont'd):
Operations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Operations (including ANL and LBL)	Supported the ANL ATLAS facility to provide beams up to uranium in an enhanced running schedule for a research program which includes FMA and APEX measurements. Continued improvements to optimize the performance and reliability of ATLAS for heavy ion acceleration. At the LBL 88" Cyclotron provide beams in an enhanced running schedule of heavy ion beams for a research program which includes Gammasphere measurements. Continued R&D on the Advanced ECR ion source.	The ANL ATLAS facility will provide heavy ion beams including uranium in a running schedule which includes FMA and APEX measurements. Continue improvements to optimize the performance and reliability of ATLAS for heavy ion acceleration. The LBL 88" Cyclotron will provide beams in a running schedule which emphasizes Gammasphere measurements. R&D will continue on the Advanced ECR ion source.	The ANL ATLAS facility will provide heavy ion beams including uranium in a running schedule which includes FMA and APEX measurements. Continue improvements to optimize the performance and reliability of ATLAS for heavy ion acceleration. The LBL 88" Cyclotron will provide beams in a running schedule which emphasizes Gammasphere measurements. R&D will continue on the Advanced ECR ion source.
	$ 8,270	$ 8,360	$ 9,500
Subtotal, Operations	$ 25,720	$ 21,155	$ 27,565
Heavy Ion Nuclear Physics	$ 64,839	$ 61,174	$ 66,800

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR PHYSICS

I. Preface: Low Energy Nuclear Physics

The basic research part of this subprogram emphasizes experimental investigations at low energies into: nuclear properties important to astrophysics issues; the behavior of nucleons at the surface of the nucleus as well as the collective behavior of the entire ensemble of nucleons acting collectively; nuclear reaction mechanisms; and experimental tests of fundamental symmetries. The last of these categories can often be accomplished without the use of accelerators, such as in the study of neutrinos from the sun. University-based research is an important feature of the Low Energy Program. Since most of the required facilities are relatively small, they are appropriate for siting on university campuses, where they provide excellent opportunities for hands-on training of nuclear experimentalists, many of whom after obtaining Ph.D.'s, contribute to nuclear technology development of interest to the DOE. The nuclear data part of this subprogram has as its main goal serving the nuclear science community and other nuclear based technical disciplines through the maintenance of a nuclear data information base that is readily accessible and user oriented.

II. A. Summary Table: Low Energy Nuclear Physics

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Research				
Research at University Facilities	$ 3,661	$ 2,980	$ 4,315	$ 1,335
Research at National Laboratory Accelerators	2,805	3,210	3,050	-160
Research at Reactors	1,064	835	195	-640
Other Research	3,715	5,649	7,140	1,491
Subtotal, Research	$ 11,245	$ 12,674	$ 14,700	$ 2,026
Operations				
Accelerator Operations	$ 5,296	$ 5,936	$ 7,600	$ 1,664
Subtotal, Operations	$ 5,296	$ 5,936	$ 7,600	$ 1,664
Nuclear Data				
Nuclear Data Measurements	$ 2,284	$ 1,700	$ 0	$ -1,700
Nuclear Data Compilation and Evaluation	4,716	4,286	4,800	514
Subtotal, Nuclear Data	$ 7,000	$ 5,986	$ 4,800	$ -1,186
Total, Low Energy Nuclear Physics	$ 23,541	$ 24,596	$ 27,100	$ 2,504

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II. B. Laboratory and Facility Funding Table: Low Energy Nuclear Physics

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	840	210	225	15
Brookhaven National Lab	3,506	2,310	3,250	940
Idaho National Engineering Lab	345	0	0	0
Lawrence Berkeley Lab	2,600	1,675	1,900	225
Lawrence Livermore National Lab	360	305	305	0
Los Alamos National Laboratory	1,695	530	1,025	495
Oak Ridge National Lab	5,366	7,210	8,540	1,330
All Other	8,829	12,356	11,855	-501
Total, Low Energy Nuclear Physics	$ 23,541	$ 24,596	$ 27,100	$ 2,504

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Low Energy Nuclear Physics			
Research			
Research at University Facilities	At Triangle Universities Nuclear Laboratory (TUNL), work emphasizes tests of fundamental symmetries. This includes searches for quantum systems which display chaotic behavior, charge symmetry breaking and additional evidence of parity violation in the nucleus. At the University of Washington use the polarized ion source and booster to study a variety of nuclear structure problems and to search for violations of fundamental symmetries. At Texas A&M University, support is provided for activities associated with giant resonance studies and nuclear astrophysics.	Research at the University of Washington will address issues relating to challenging fundamental problems in symmetries, giant resonances, nucleus-nucleus reactions, and other areas of nuclear physics. This includes the use of the polarized ion source and booster to study a variety of nuclear structure problems and to provide new understanding of possible violations of fundamental symmetries. At TUNL, the fundamental research goal will be to provide new understanding of nuclear astrophysics and fundamental symmetries. In the latter are included searches for quantum systems which display chaotic behavior, charge symmetry breaking and additional evidence of parity violation in the nucleus.	The research goal at TUNL, will be to provide new understanding of nuclear astrophysics and nuclear structure. Research includes the use of the unique polarized ion source to study a variety of nuclear structure problems and to search for violations of fundamental symmetries. In the latter are included searches for quantum systems which display chaotic behavior, charge symmetry breaking and additional evidence of parity violation in the nucleus. Using the Tandem injector and superconducting LINAC booster at the University of Washington, research will encompass fundamental symmetries, giant resonances, nucleus-nucleus reactions, and other areas of nuclear physics. Also at the University of Washington, solar neutrino research, described in the "Other Research" section, involves joint research with a consortium of

III. Low Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Research at University Facilities (Cont'd)			U.S., Canadian and British groups that are developing at the Solar Neutrino Observatory (SNO) located in Sudbury, Canada.
	$ 3,661	$ 2,980	$ 4,315
Research at National Laboratory Accelerators	Continued low energy research at three of the national laboratories. At ORNL, continued development of the Radioactive Ion Beam (RIB) facility and associated research. At ANL, research into the structure of nuclei far from stability continued with the use of the recoil mass separator (RMS); at LBL the main effort will be devoted to the Sudbury Neutrino Observatory (SNO) collaboration (described below under Other Research). At BNL and LBL, developmental efforts addressed issues associated with producing and handling beams of unstable nuclei.	At ORNL, the intense beams of radioactive ions from RIB will allow, for the first time, access to combinations of proton and neutron configurations at, and beyond, the limits of proton stability. In addition, such beams also will be used to initiate a new and exciting chapter of nuclear astrophysics in which both the structure and the reaction cross sections of nuclei involved in the CNO cycle process and the rapid proton capture process can be studied. At LBL, the main effort will be devoted to an international collaboration, described below under Other Research, to measure solar neutrino flux rates. Activities at ANL have been transferred to the Heavy Ion program.	At ORNL, intense beams of radioactive ions from RIB will be used to initiate a new and exciting chapter of nuclear astrophysics in which both structure and reaction cross sections of nuclei involved in the CNO cycle and the rapid proton capture process can be studied. These studies will be done along with involvement of British scientists using the $3,500,000 recoil separator that has been contributed to ORNL by the Daresbury Laboratory in England. These efforts will be complimented by occasional use of the Oak Ridge Electron Linear Accelerator (ORELA) which has become part of this sub-program. In addition, RIB will allow, for the first time, production and measurement of atomic nuclei with combinations of proton and neutrons at, and beyond, the limits of proton stability. The nuclear structure research effort at ORNL, transferred from the Heavy Ion Program, will focus on RIB related research. At LBL, the main effort will be devoted to an international collaboration to study solar neutrinos (see "Other Research" described below), and studies aimed at better defining the use and characteristics of ion sources for the production of intense radioactive ion beams. At BNL, the Nuclear Structure Group, which previously used the reactor-based on-line isotope separator

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III. Low Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Research at National Laboratory Accelerators (Cont'd)			TRISTAN, primarily will focus on the investigation of nuclei having abnormal isospin using off-site facilities such as the ORNL RIB Facility.
	$ 2,805	$ 3,210	$ 3,050
Research at Reactors	Continued both the BNL nuclear structure research and the fundamental neutron measurements at the NIST. At BNL, used the TRISTAN on-line isotope separator at the HFBR to study isotopes of interest to nuclear astrophysics problems. Continued studies of isotopes important to safety related issues such as emergency core cooling and reactor decay heat calculations. Access to isotopes important to both of these categories will be improved with the possible upgrade of the TRISTAN on-line isotope separator by locating the ion source nearer to the reactor core and thereby gaining a factor of thirty in intensity of the separated beams. At the NIST cold neutron beam facility, continued studies of time reversal symmetry violation.	The goal of the measurements at NIST, which has the only cold neutron facility in the United States, will use their unique polarized beams to provide an understanding of the fundamental properties of the neutron. These measurements also lead to fundamental answers about the weak interaction and provide insight into the origin of parity violations. Using the High Flux Beam Reactor at BNL, investigations of nuclei with abnormal proton-neutron ratios and development of techniques to identify abnormal nuclear properties will complement experiments using radioactive beams that will initially be available at the ORNL RIB facility. At BNL, discontinue studies of isotopes related to reactor decay heat calculations.	Measurements at the NIST reactor, which has the only cold neutron facility with polarized beams in the United States, have as their goal an understanding of the basic properties of the neutron such as lifetimes and dipole moments. These measurements probe fundamental bases of the weak interaction and provide insight into the origin of parity violations. At BNL, the on-line Isotope Separator TRISTAN will cease to operate.
	$ 1,064	$ 835	$ 195

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III. Low Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Research	Continued support for international collaborations in solar neutrino research, the Sudbury Neutrino Observatory (SNO), the Gallium Experiment (GALLEX) and the Soviet-American Gallium Experiment (SAGE) projects. For the SNO project: the Univ. of Penn. has major responsibility for optimization of the many thousands of photomultipliers and the development and acquisition of photomultiplier tube bases, signal processing electronics, and software organization; LANL has major responsibilities for R&D on the large acrylic vessel for the 1,000 tons of heavy water, and for acquisition of photomultipliers and computer hardware; LBL, for fabrication of a critical radioactive-free photomultiplier support structure. At BNL, the nuclear chemistry aspects of GALLEX were supported by the involvement of their nuclear chemists, including development of a Cr-51 calibration source.	The objective of the solar neutrino research program is to measure the flux of neutrinos from the sun arising from the nuclear processes that drive the sun's energy production. Previous measurements have found neutrino fluxes substantially lower than those predicted by the best current astrophysical models of the sun. The discrepancy between measurements and predictions have two possible explanations; either the solar nuclear processes are not well understood, or the neutrinos themselves, after the initial solar production, are transformed into exotic types which are not detectable by present experiments. If the later case is true, neutrinos would have a small mass and these results provide the first concrete evidence for a change required to the Standard Model of particles and forces which underlies our fundamental understanding of energy and matter. Present experiments use Gallium as the detection material to focus on the primary proton burning process which is not very sensitive to solar models. These international collaborations include a US/European experiment (GALLEX) located in the Gran Sasso tunnel in Italy, the second being a US/Russian (SAGE) experiment located in a deep cavern in the Russian Caucasus mountains. These will be augmented with a new US/Canadian/UK collaborative experiment (SNO) sited in a very deep nickel mine in Sudbury, Ontario. Use of 1000 tons of heavy water, provided the AECL, will uniquely permit detection of the exotic massive neutrinos if they exist. The responsibilities of the U.S.	The objective of the solar neutrino research program is to measure the flux of the neutrinos from the sun arising from the nuclear processes that drives the sun's energy production. Previous measurements have found high energy neutrino fluxes substantially lower than those predicted by the best current astrophysical models of the sun. The discrepancy between measurement and predictions have two possible explanations: either the solar nuclear processes are not well understood; or the neutrinos themselves, after initial solar production, are transformed into exotic types which are not detectable by present experiments. If the later case is true, neutrinos would have a small mass and these results provide the first concrete evidence for a change required in the Standard Model of particle and forces which underlies our fundamental understanding of energy and matter. Present solar neutrino experiments use Gallium as the detection material to focus on the very low energy neutrinos which arise from the primary proton burning process, because it is not very dependent on the details of solar models. These international collaborations include a US/European experiment (GALLEX) located in the Gran Sasso tunnel in Italy and in a second effort, the US/Russian (SAGE) experiment located in a deep cavern in the Russian Caucasus mountains. Results from these detectors independently find that neutrinos are missing from the low energy solar flux as well. These experiments are coming

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Program Activity	FY 1994	FY 1995	FY 1996
Other Research (Cont'd)		participants will be: LANL has major responsibilities for R&D on data-acquisition codes, computer hardware, photomultipliers and nuclear chemistry related issues; LBL for fabrication of the background-free photomultiplier support structure; and the University of Pennsylvania for optimization of the photomultipliers.	to natural conclusion upon completion of calibration tests to verify detector efficiencies. Solar neutrinos research will be refocused onto a US/Canada/UK collaborative experiment, the Solar Neutrino Observatory (SNO), sited in a very deep mine in Sudbury, Ontario. Use of 1000 tons of heavy water provided by the Canadian AECL, supplemented by special neutral current detector techniques, will uniquely permit detection of exotic massive neutrinos if they exist. The responsibilities of the U.S. participants are: the University of Washington (described under the previous section entitled: "Research at University Facilities"); and LANL has responsibility for aspects of radiochemistry measurement and analysis; LBL for fabrication of the background-free photomultiplier support structure and nuclear chemistry related issues; and the University of Pennsylvania for optimization of the photomultipliers. Increased on-site involvement of these groups will occur once SNO is operational. The collaboration will focus on various aspects of data acquisition, analysis and interpretation as well as on going functional improvements including development, installation, and operation of neutral current detectors. During the first year of data taking, part of the efforts will concentrate on the analysis of the charged current reaction, which has a relatively large cross section for Boron-8 neutrinos, to correlate results with previous evidence for neutrino oscillations.

III. Low Energy Nuclear Physics (Cont'd):
Research (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Research (Cont'd)	Funding in the amount of $1,607,000 has been transferred to the SBIR program.	Funding in the amount of $1,265,000 has been budgeted for the SBIR program.	Funding in the amount of $1,266,000 has been budgeted for the SBIR program.
	$ 3,715	$ 5,649	$ 7,140
Subtotal, Research	$ 11,245	$ 12,674	$ 14,700
Operations			
Accelerator Operations	Fully supported two university accelerator facilities located at Duke University and the Univ. of Washington. Operations support of the superconducting cyclotrons at Texas A&M was provided by the heavy ion program. Provided operations support for the Radioactive Ion Beam (RIB) project at ORNL.	The major objective at ORNL is the completion of a world class accelerator for RIB. This facility will couple the existing ORIC cyclotron and Holifield Tandem facilities into a unique and cost effective facility for producing and accelerating short-lived radioactive nuclides. Additionally, support is provided for two university accelerator facilities located at Duke University and the University of Washington, whose operational goals and objectives are presented above under Research at University Facilities.	The major objective at ORNL is the completion and initial operation of a world class accelerator for RIB. This facility couples the existing ORIC cyclotron and Holifield Tandem facilities into a unique and cost effective facility for producing and accelerating short-lived radioactive nuclides Support is provided for four university accelerator facilities located at Duke University, the University of Washington, Ohio University and the University of Massachusetts-Lowell, whose operational goals and objectives are presented above in the section entitled: "Research at University Facilities."
	$ 5,296	$ 5,936	$ 7,600
Subtotal, Operations	$ 5,296	$ 5,936	$ 7,600

III. Low Energy Nuclear Physics (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Data			
Nuclear Data Measurements	Based on priorities set by DOE's Nuclear Advisory Committee's (NSAC's) study of National Nuclear Data Needs in the 1990's (NNDN-90), strengthened high priority components and phased out or consolidated lower priority components. Strengthened the university based measurements of priority cross-sections for higher energy neutrons and charged particles. Addressed issues important to several segments of the DOE nuclear data user community such as measurements important to the decay heat problem, nuclear reaction cross section measurements important to nuclear astrophysics, and standards used in waste management, and nuclear medicine. Ceased activities associated primarily with advanced reactor research. This included terminating the operation of ORELA at ORNL in support of advanced reactor research.	The goal of this subprogram is to provide priority measurements coordinated with the testing and improvement of models for use in the prediction of cross sections. These models address critical questions in uses such as nuclear astrophysics. Some of these measurements of reaction cross-sections are for higher energy neutrons, in particular for (n,p) and (n, alpha) reactions, to derive level density information. At INEL, discontinue measurement of radioactive nuclides related to decay heat calculations.	This subprogram has been terminated. Some activities have been transferred to the Low Energy Research Program, the Operations sub-program, or the Nuclear Data Compilation and Evaluation subprogram. Of those transferred, the Oak Ridge Electron Linear Accelerator (ORELA) will become part of the RIB Nuclear Astrophysics effort (see Research: National Laboratory Accelerators) and operate in a diminished capacity in conjunction with nuclear astrophysics measurements at RIB. Additional nuclear data measurements using ORELA will occur as demands and their concomitant external support are received. A majority of the university component has been transferred to the research component of the Low Energy Nuclear Physics Program.
	$ 2,284	$ 1,700	$ 0
Nuclear Data Compilation and Evaluation	Using the results of the NNDN-90's review, the National Academy of Science's Nuclear Data Compilation Panel and the Nuclear Structure Evaluation Working Group, strengthened the structure component of the program that is developing electronic data access and assessment capabilities. This included revising the compilation and evaluation activities to improve nuclear data libraries, and their accessibility. Supported activities with respect to modernization and coordination of the nuclear structure data information system including replacement with more effective electronic data dissemination	The goal is to provide a nuclear data base to serve the DOE science and technology base through maintenance of nuclear data activities of compilation, storage and dissemination of evaluated nuclear data files. Cost reductions will be brought about by participation in international data activities such as participation in the international nuclear data effort coordinated by the IAEA nuclear data center, the Nuclear Energy Agency (NEA), and the Working Group on International Evaluation Cooperation. A primary objective will be to modernize the nuclear data information system by replacement of hard copy publications with more	The goal is to provide a nuclear data base to serve nuclear physics and other technical users through the nuclear data activities of compilation, storage and dissemination of nuclear data files. Participation in international data activities such as the international nuclear data effort coordinated by the IAEA nuclear data center, the Nuclear Energy Agency (NEA), and the Working Group on International Evaluation Cooperation will provide a cost effective basis for operation. A primary objective will be the continued modernization of the nuclear data information system by phased replacement of hard copy

III. Low Energy Nuclear Physics (Cont'd):
Nuclear Data (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Data Compilation and Evaluation (Cont'd)	techniques. Continued participation in the Working Group on International Evaluation Cooperation to maintain the coordination of nuclear data evaluation activities and free exchange of the results. Continued support for the IAEA international Nuclear Data efforts. Addressed cross section code files and modernization of national data, networking at BNL, LANL, LBL, and LLNL.	effective electronic data dissemination techniques. This includes expansion of electronic data bases as vehicles for timely and cost-effective compilation and dissemination of assessed nuclear properties. This will improve the interactive and interrogative user-friendly nature of both computer network and personal computer information platforms. Strategic research at LLNL, in cooperation with industry, will address the integration of nuclear physics cross section data bases into interactive programs to provide predictions of dose distributions in radiation oncology patients.	publications with more effective electronic data dissemination techniques. This includes expansion of electronic data bases as vehicles for timely and cost-effective compilation and dissemination of assessed nuclear properties. High priority will be placed on the improvement of interactive and interrogative user-friendly nature of both computer network and personal computer information platforms.
	$ 4,716	$ 4,286	$ 4,800
Subtotal, Nuclear Data	$ 7,000	$ 5,986	$ 4,800
Low Energy Nuclear Physics	$ 23,541	$ 24,596	$ 27,100

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR PHYSICS

I. Preface: Nuclear Theory

Theoretical Nuclear Physics is a program of fundamental science research to provide new insight into the observed behavior of atomic nuclei. The understanding of nuclear phenomena is prerequisite to understanding the material foundations of the world around us and in our universe. The research ranges from relating the description of elementary constituent particles and the fundamental forces connecting them, to accounting for the collective interactions of nuclei as a whole. The selection of the elements of the nuclear theory program is based on the results of anonymous peer reviews by recognized experts in the international nuclear physics community. The long-range objectives of the Nuclear Theory subprogram are to obtain a comprehensive understanding of the character and structure of nuclear matter at the most fundamental level in terms of the properties of the constituent quarks and gluons, and using this knowledge to further define the relationships between the nucleons embedded in the environment of the nucleus as a whole. These objectives are approached by interpreting results from nuclear physics experiments and by predicting phenomena and relationships to test this description. Nuclear theory research at universities and national laboratories entails individual efforts that transcend subcategories of nuclear physics. Much of nuclear theory requires extensive use of supercomputer capabilities and the development of innovative algorithms to use this advanced technology. The graduate students and post-docs supported in the Theoretical Nuclear Physics program are highly trained in technical problem solving techniques and have the flexibility to broadly enhance the nation's scientific and technical literacy. The strength of the nuclear theory effort is enhanced by strong interactions with the international nuclear physics community as well as by nuclear theory efforts supported at other agencies, such as the National Science Foundation. This is particularly true at the National Institute for Nuclear Theory in Seattle, increasingly recognized as a center of world leadership in nuclear theory. The National Advisory Committee of the Institute comprises physicists from Europe, Japan, and the United States from both the DOE and NSF programs. In many cases, program directors of short term programs at the Institute come from outside the United States and from NSF programs.

II. A. Summary Table: Nuclear Theory

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Nuclear Theory	$ 14,648	$ 14,650	$ 15,500	$ 850
Total, Nuclear Theory	$ 14,648	$ 14,650	$ 15,500	$ 850

II. B. Laboratory and Facility Funding Table: Nuclear Theory

Argonne National Lab (East)	$ 925	$ 900	$ 950	$ 50
Brookhaven National Lab	1,100	1,075	1,175	100
Continuous Electron Beam Accelerator Facility	130	490	520	30
Lawrence Berkeley Lab	935	850	950	100
Los Alamos National Laboratory	775	850	920	70
Oak Ridge National Lab	748	590	830	240

II. B. Laboratory and Facility Funding Table: Nuclear Theory

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
All Other	10,035	9,895	10,155	260
Total, Nuclear Theory	$ 14,648	$ 14,650	$ 15,500	$ 850

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Theory			
Nuclear Theory	Operated the Institute for Nuclear Theory at the University of Washington (Seattle) as a focus center for the development of forefront basic research programs in theoretical nuclear physics. Maintained the present level of effort at the institute and continued to support interaction with the nuclear physics community by providing study groups and long-term workshops in critical research areas. Supported initiatives which enhance the mutual interaction and stimulation between theory programs at national laboratories and the university programs, (in part in collaboration with the USDOE High Performance Computing and Communications Program). Supported those efforts which provide a strong theoretical support to the highest priority programs in Nuclear Physics, including the Continuous Electron Beam Accelerator Facility (CEBAF), the Relativistic Heavy Ion Collider (RHIC), and the Gammasphere multi-detector array. These programs should lead to a more fundamental understanding of nuclear forces involved in the interaction between protons and neutrons as well as their further manifestations such as symmetries in nuclei. They will	To enhance our understanding of the fundamental structure and governing forces in atomic nuclei, focus highest quality research on top priority areas of nuclear physics research - the physics relevant to the Continuous Electron Beam Accelerator Facility (CEBAF) and the Relativistic Heavy Ion Collider (RHIC), the GAMMASPHERE multi-detector array, and the Radioactive Ion Beam (RIB) programs. Provide full support of the CEBAF theory program from Nuclear Theory as CEBAF changes from construction to operational status. Maintain a balance between university and laboratory programs to develop an appropriate supply of highly trained students and post-docs, and thus providing a highly skilled supply of theoretical physicists for DOE programs. Operate the fully staffed Institute for Nuclear Theory at the University of Washington as a focus center for the development of forefront basic research programs in theoretical nuclear physics. Support interaction between the Institute and the nuclear physics community by providing for study groups and long-term workshops at the Institute in critical research areas,	To expand our understanding of the fundamental structure of atomic nuclei, support and strengthen those most vital programs which are closely coupled to the highest priority nuclear physics research programs-the physics addressed at the Continuous Electron Beam Accelerator Facility (CEBAF),the Relativistic Heavy Ion Collider (RHIC), the Gammasphere multi-detector array, RIB, and the Solar Neutrino Observatory (SNO). To achieve this objective, support for some existing programs will be phased-out in the period from the beginning of FY 1995 to the end of FY 1996. The program reductions will be chosen to be consistent with the following priorities: 1) strongly support university based theory programs where there are particularly good opportunities for training the highly skilled students and post-docs needed for the DOE research effort; 2) ensure the vitality of strong theoretical nuclear physics programs at the national laboratories to meet high priority objectives; and 3) operate the fully staffed Institute for Nuclear Theory at the University of Washington as a focus center for the development of forefront basic research programs in theoretical nuclear physics. Support

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III. Nuclear Theory (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Theory (Cont'd)	require the development of theories that address the description of nuclei in terms of the underlying quark-gluon substructure of nuclear matter, and of phase transitions in nuclear matter.	thereby enhancing the transfer of knowledge to the centers across the nation. Support initiatives which enhance the mutual interaction and stimulation between theory programs at national laboratories and the university programs, including collaboration with the USDOE High Performance Computing and Communications Program. These programs should lead to a more fundamental understanding of nuclear phenomena, of the role of the underlying quark-gluon substructure of nuclear matter, and of phase transitions in nuclear matter.	the interaction between the Institute for Nuclear Theory and the nuclear physics community by providing for long-term programs and workshops in critical research areas of nuclear physics and in areas of strong interaction with other physics disciplines. These programs should lead to a more fundamental understanding of nuclear phenomena, of the role of the underlying quark-gluon substructure of nuclear matter, of phase transitions in nuclear matter, and of several current outstanding problems in astrophysics.
	No activity.		
	$ 14,648	$ 14,650	$ 15,500
Nuclear Theory	$ 14,648	$ 14,650	$ 15,500

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR PHYSICS

I. Preface: Capital Equipment

Capital equipment funds are needed to provide for particle detection systems, for data acquisition and analysis systems, and for instrumentation to improve performance of Nuclear Physics accelerators. These funds are essential for effective utilization of the national accelerator facilities operated by the Nuclear Physics program. In addition, the program has landlord responsibility for providing general purpose capital equipment at the Lawrence Berkeley Laboratory.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
CEBAF	$ 11,300	$ 10,200	$ 8,100	$ -2,100
BNL	1,890	2,530	5,300	2,770
LBL	1,186	996	1,550	554
LANL	289	844	375	-469
MIT/Bates	1,675	2,125	3,795	1,670
ANL	1,105	1,350	1,400	50
ORNL	2,345	1,525	2,225	700
University Laboratories and User Groups	2,165	3,400	1,280	-2,120
Sudbury Neutrino Observatory	3,362	0	0	0
Gammasphere	4,450	1,750	0	-1,750
Lawrence Berkeley Laboratory - GPE	1,870	1,870	2,000	130
Other	363	1,410	1,975	565
Total, Capital Equipment	$ 32,000	$ 28,000	$ 28,000	$ 0

II. B. Laboratory and Facility Funding Table: Capital Equipment

Argonne National Lab (East)	$ 1,105	$ 1,350	$ 1,400	$ 50
Brookhaven National Lab	1,890	2,530	5,300	2,770
Continuous Electron Beam Accelerator Facility	11,300	10,200	8,100	-2,100
Lawrence Berkeley Lab	8,386	4,616	3,550	-1,066
Los Alamos National Laboratory	2,409	844	375	-469
Oak Ridge National Lab	2,345	1,525	2,225	700
All Other	4,565	6,935	7,050	115
Total, Capital Equipment	$ 32,000	$ 28,000	$ 28,000	$ 0

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
CEBAF	Continued procurement of components for the CEBAF Large Acceptance Spectrometer (CLAS) in Hall B. (This spectrometer, designed around a superconducting toroidal magnet, a drift chamber system, and a electromagnetic shower calorimeter, will provide an unique and exciting opportunity to study reactions leading to multiple-particle final states.) Erected space frame for the toroidal magnet and installed the tagging magnet. Commenced stringing wires in first Region 3 drift chamber. Began installing scintillator and lead layers in first calorimeter section. Procured general use equipment for the CEBAF facility such as equipment for the computer center, laboratories, offices, and shops.	Continue procurement of components for the CLAS spectrometer. Install and commission superconducting toroidal magnet. Continue construction of drift chambers, scintillation counters, electromagnetic calorimeters, Cerenkov counters. Install some detector sections. Procure general use equipment for the CEBAF facility such as equipment for the computer center, laboratories, offices, and shops.	Complete procurement of components for the CLAS spectrometer. Complete construction and installation of detectors for all sectors and begin commissioning tests. Procure general use equipment for the CEBAF facility such as equipment for the computer center, laboratories, offices, and shops.
	$ 11,300	$ 10,200	$ 8,100
BNL	Improved heavy ion experiments E866, E877, and E878 to take advantage of the unique gold beam from the AGS facility. Initiated fabrication of silicon Vertex Detector (SVD) for the STAR detector at RHIC. At LEGS, procured a helium dilution refrigerator as the initial step in the construction of a polarized H-D frozen spin target to be used in experiments that measure the spin structure of the proton and the neutron. This type of target has an unusually high degree of polarization and a high fraction of polarized species. The LEGS collaboration includes members from the Frascati National Laboratory, Italy and the University of Rome. Provided a tantalum shield for the chromium-51 calibration source for the GALLEX solar	Begin construction of experiment E896, which is designed to search for new states of nuclear matter produced in nucleus-nucleus collisions at the AGS. The study of these nuclear reactions provide information that will be needed to interpret data from the RHIC facility now under construction. Continue SVD, initiate muon detector for PHENIX, and augment Laboratory computing capability as recommended by NSAC. At LEGS, continue constructing the frozen spin target of H-D ice, purchasing a superconducting holding coil.	Complete construction of experiment E896, which is capable of unambiguously identifying the topological signature of unstable particle decays as well as the rigidity of each charged particle produced, thus affording a sensitive search for new metastable states and investigation of the properties of known strange particle states. Continue SVD, muon detector and computer upgrades. At LEGS, construct a large acceptance detector for use with the frozen spin target of H-D ice and begin a program of experiments which are sensitive to the partitioning of total nucleon spin into the intrinsic and orbital components of the nucleon's constituents.

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III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
BNL (Cont'd)	neutrino detector. The GALLEX collaboration consists of ten institutions in Germany, Italy, France, Israel, and the U.S.		
	$ 1,890	$ 2,530	$ 5,300
LBL	Completed fabrication of read-out electronics for the CERN lead beams experiment NA49. This electronics development effort also provides prototype experience for the design of the TPC system in the STAR experiment at RHIC in which LBL plays a leading role. Continued to develop the analysis center for 3-dimensional TPC data.	Continue to acquire and modernize equipment to design and test integrated circuits for STAR and CERN TPC electronics. The ongoing endeavor to develop integrated circuits (ICs) requires a continuous effort to stay with state-of-the-art design hardware and software. With each new generation of ICs it is necessary to review the possibility of using more recent and more dense processes, thus further reducing the cost of individual ICs. Continue to develop the analysis center for 3-dimensional TPC data.	Provide equipment for relativistic heavy ion research, nuclear structure and reaction studies, and nuclear astrophysics/weak interactions research. Continue to acquire data acquisition and analysis computing power for the rapid analysis and publication of the physics from existing and new detector systems.
	$ 1,186	$ 996	$ 1,550
LANL	Began construction of an additional detector system for the Sudbury Neutrino Observatory that will permit simultaneous, real-time measurement of the neutral-current and the charged-current signals. Discrete helium-3 filled neutron detectors made from material with extremely low radioactivity will be installed within the heavy water volume of the SNO detector.	Complete fabrication of the neutral current detector system for the Sudbury Neutrino Observatory. By adding the neutral current detection capability, the SNO detector can make an accurate determination of whether solar neutrinos change their flavor en route to the earth. Provide improved detection equipment for the SAGE solar neutrino observatory at the Baksan Laboratory in Russia.	Provide equipment for the on-going medium energy and heavy ion programs and for solar neutrino research.
	$ 289	$ 844	$ 375

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III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
MIT/Bates	Upgraded existing magnetic spectrometers and associated detector systems to utilize the extracted, high-duty-cycle beam from the South Hall Ring Experiment. Made improvement of the Bates electron linac by upgrading RF, vacuum and control system components. Fabricated components for the HERMES experiment, an international collaborative experiment that will measure the spin structure functions of the nucleon in an electron storage ring at the DESY facility in Germany.	Begin fabrication of detector system for internal target experiments with the South Hall Ring. Fabricate gantry support system for the out-of-plane spectrometer system (OOPS), which is being jointly funded by the National Science Foundation. Construct cryogenic and polarized targets for extracted beam experiments. Procure klystron power tubes for 1 GeV operation. Continue improvement of the Bates electron linac by replacing RF and vacuum system components. Continue fabrication of detector components for the HERMES experiment that will measure the spin structure function of the nucleon.	Continue fabrication of detector system for internal target experiments with the South Hall Ring. Fabricate cryogenic and polarized targets for extracted beam experiments. Continue to procure klystron power tubes to enable full energy, high current operation of the linac. Continue improvement of the Bates electron linac by replacing RF and vacuum system components. Complete fabrication of detector components for the HERMES experiment that will measure the spin structure functions of the nucleon.
	$ 1,675	$ 2,125	$ 3,795
ANL	For the Fragment Mass Analyzer (FMA), provided a double-sided silicon detector and associated electronics that will enable the detection of extremely weak processes. Radioactive nuclei are implanted, mass identified, and time and position correlated with their subsequent proton and alpha decays. Fabricated a high-density helium-3 target, operating at 50 atmospheres and 20 degrees Kelvin, for a major program of experiments in CEBAF's Hall C.	For the APEX detector, which is used to study spontaneous positron production in collisions of very heavy nuclei, modify the heavy ion counters to improve the maximum count rate, the limiting factor in APEX's data acquisition rate. Fabricate the Cerenkov counter for the HERMES experiment at the DESY facility which is measuring the spin structure functions of the nucleon.	Fabricate high-stability and low-noise electronics for the double-sided strip detector on the FMA to fully exploit the capabilities of this very powerful detector system for observing nuclei produced with very low cross sections. For experiments at CEBAF fabricate a laser-polarized tritium target for study of the those two- and three-body nuclear systems which can be calculated exactly: deuterium, tritium and helium-3.
	$ 1,105	$ 1,350	$ 1,400

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ORNL	In preparation for research using the Radioactive Ion Beam (RIB) facility, began installation of the Daresbury recoil mass separator for a program of nuclear astrophysics studies. The RIB facility presents an opportunity long-awaited by nuclear astrophysics to gain further understanding of stellar explosive hydrogen burning. The proton-rich radioactive beams provided by RIB make it ideally suited for these studies. A large collaboration which includes scientists from four British universities is developing an astrophysics research program around the Daresbury recoil separator. Completed construction of highly-integrated, electronic readout system for lead-glass photon detector for CERN experiment WA98. Provided data acquisition equipment, electronics and mounting hardware needed to combine about 150 crystal BaF2 detectors from several laboratories into a single array.	In further preparation for the research program at the RIB facility, construct a beam line to the Recoil Mass Separator (RMS) apparatus and begin procurement of its detector systems. Studies with the RMS are expected to define the proton drip line in medium-weight elements. Provide equipment to handle remotely RIB components activated during accelerator operations, particularly the RIB target/ion source.	Begin acquisition of a gamma-ray detector array to completely surround the RMS target. High efficiency detection is needed to perform spectroscopic studies with the low intensity radioactive beams available from RIB. Fabricate a higher efficiency target/ion source using an ECR plasma for the ionizer. Upgrade obsolete control systems for accelerators and the beam lines.
	$ 2,345	$ 1,525	$ 2,225
University Laboratories and User Groups	Continued upgrade of instrumentation at university laboratories. Constructed the following research equipment: Texas A&M University (beam analysis system for the magnetic spectrometer), TUNL (upgrade of low energy beam accelerator facility, dynamically polarized proton target), Yale University (equipment to search for strange quark matter -- strangelets -- at the BNL AGS accelerator). Constructed and provided electronic instrumentation for various detector components for the HERMES experiment.	Continue instrumentation initiative at university laboratories with construction of particle and gamma-ray detectors, spectrometer systems, and data analysis facilities. Continue to construct and instrument components for the HERMES experiment. Fabricate the neutral current detectors for the Sudbury Neutrino Observatory (SNO). Construct neutrino experiments at the Chooz and San Onofre nuclear reactor sites.	Continue instrumentation initiative at university laboratories with construction of particle and gamma-ray detectors, spectrometer systems, and data analysis facilities. Complete construction of components for the HERMES experiment. Continue to construct the neutrino experiment at the San Onofre nuclear reactor site.

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III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
University Laboratories and User Groups (Cont'd)	$ 2,165	$ 3,400	$ 1,280
Sudbury Neutrino Observatory	Installed the 55-foot diameter geodesic frame which supports 9,550 photomultiplier tubes for the Sudbury Neutrino Observatory (SNO) detector. The start of the heavy water fill is scheduled for December 1995. SNO is located in a cavity excavated at the 6800 foot level of the Creighton mine in Sudbury, Ontario. This unique world-class facility for neutrino astrophysics, using heavy water as its principal sensitive medium, has a very high potential for fundamental discoveries in solar physics and in the properties of neutrinos, in particular neutrino oscillations. SNO is a collaborative Canadian, U.S. and U.K. project. The U.S. share of construction costs for the SNO project is $11,900,000 in actual year dollars and is provided as Capital Equipment funds. The entire SNO project has a capital cost estimate of about $50,000,000 and will make use of a valuable store of 1,000 tons of extra pure Canadian heavy water loaned to the project by the Atomic Energy Commission of Canada.	No activity.	No activity.
	$ 3,362	$ 0	$ 0

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Gammasphere	Continued very active physics program with Early Implementation configuration: 35 detectors, temporary electronics and temporary support frame. Began procurement of a new, improved style of detectors which are less influenced by Doppler broadening effects. The new detectors have segmented germanium crystals which increase the granularity of the detector array thus doubling the resolving power over that originally planned for Gammasphere. Installed final support frame and began installation of the new data acquisition electronics and computer system.	Complete receiving detectors of the new style and begin full operation. Gammasphere is a world-class high-resolution gamma-ray facility for the study of nuclear structure at high angular momentum, finite temperature and large deformation. Gammasphere is designed to observe high-multiplicity coincidence events which are crucially important for the analysis of complex gamma-ray spectra. Up to 110 large Compton- suppressed germanium detectors can be mounted around the target on a spherical support frame. The instrument can address a broad range of nuclear physics such as superdeformed nuclei, damping, giant resonances, symmetries in nuclei, correlations in nuclear reactions, fundamental interactions, and certain astrophysics questions. Gammasphere will be sited initially at Lawrence Berkeley Laboratory's 88-Inch Cyclotron facility. Gammasphere has an total estimated cost (TEC) of $17,700,000 in actual year dollars.	No activity.
	$ 4,450	$ 1,750	$ 0
Lawrence Berkeley Laboratory - GPE	Provided general purpose equipment at Lawrence Berkeley Laboratory, for which the Nuclear Physics program has landlord responsibility. Typical examples of equipment requested by the various LBL support organizations (Administrative Division; Facilities Department; Information and Computing Science Division; Engineering Division; and Environment, Health and Safety Division) are forklifts and trucks, data processing equipment used in administrative functions, computer networking infrastructure, on-line presentation systems (e.g., Mosaic),	Provide general purpose equipment for the needs of these LBL support organizations: Administrative Division; Facilities Department; Information and Computing Science Division; Engineering Division; and Environment, Health and Safety Division.	Provide general purpose equipment for the needs of these LBL support organizations: Administrative Division; Facilities Department; Information and Computing Science Division; Engineering Division; and Environment, Health and Safety Division.

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Berkeley Laboratory GPE (Cont'd)	UNIX platforms for Library and TID databases, on-line scientific imaging and visualization capability, CAD/CAM workstations, cable testers, fume hoods, and waste water monitoring units.		
	$ 1,870	$ 1,870	$ 2,000
Other	Provided equipment for smaller programs at other national laboratories which conduct portions of the nuclear data program.	Provide equipment for some participants of the nuclear data program, more rapid completion of selected experimental systems in the low energy, medium energy or heavy ion research program.	Provide equipment for some participants of the nuclear data program, more rapid completion of selected experimental systems in the low energy, medium energy or heavy ion research program.
	$ 363	$ 1,410	$ 1,975
Capital Equipment	$ 32,000	$ 28,000	$ 28,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR PHYSICS

I. Preface: Construction

II. A. Summary Table: Construction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Construction	$ 101,990	$ 78,100	$ 79,760	$ 1,660
Total, Construction	$ 101,990	$ 78,100	$ 79,760	$ 1,660

II. B. Laboratory and Facility Funding Table: Construction

Argonne National Lab (East)	$ 300	$ 500	$ 500	$ 0
Brookhaven National Lab	79,300	71,300	71,300	0
Continuous Electron Beam Accelerator Facility	16,590	1,345	3,445	2,100
Lawrence Berkeley Lab	3,555	3,555	3,700	145
Oak Ridge National Lab	1,000	200	400	200
All Other	1,245	1,200	415	-785
Total, Construction	$ 101,990	$ 78,100	$ 79,760	$ 1,660

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Construction			
Construction	At the Continuous Electron Beam Accelerator Facility (CEBAF), completed accelerator and civil construction. Began commissioning activities. Started beam delivery to experimental Hall C and physics operation. ($16,590)	Begin multiphase beam operation. Complete construction project. Complete installation of a pair of High Resolution Spectrometers in Hall A and begin physics use. ($1,000)	
	At the Relativistic Heavy Ion Collider (RHIC), continued installation of injection line magnets. Completed installation of collider ring magnet stands and cable trays. Continued production and started installation of collider ring superconducting magnets. Continued procurement of cryogenic equipment, vacuum pumps, and power supplies. Awarded long lead procurements for major detector subsystems. ($78,000)	Conduct injection line beam tests. Complete installation and start cooldown of the first sextant of the collider ring. Continue production and installation of collider ring supercomducting magnets. Continue procurement of cryogenic equipment, vacuum pumps, and power supplies. Continue procurement of detector subsystems. Start detector systems assembly. ($70,000)	Continue installation and cooldown of ring sectors. Complete full system demonstration of the first sextant of the collider ring. Begin final phase of superconducting magnet production. Continue procurement of collider ring and detector components. Begin tests of detector subsystems. ($70,000)
	For Accelerator Improvements and Modifications projects, provided essential modifications and upgrades that are required on an annual basis to maintain and improve the reliability and efficiency of accelerators and experimental facilities. ($3,800)	Reduced level of activity due to completion of funding of Radioactive Ion Beam facility at ORNL. ($3,200)	Increased level of activity due to requirements at Continuous Electron Beam Accelerator Facility. ($4,975)
	For General Plant Projects, provided essential additions, modifications, and improvement that are required on an annual basis to maintain safety and effectiveness of general laboratory plant and support facilities. ($3,600)	Increased level of activity due to requirements at Continuous Electron Beam Accelerator Facility. ($3,900)	Increased level of funding due to emphasis on high priority ES&H activities. ($4,785)
	$ 101,990	$ 78,100	$ 79,760

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III. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction	$ 101,990	$ 78,100	$ 79,760

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF ENERGY RESEARCH
GENERAL SCIENCE AND RESEARCH
Nuclear Physics
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unappropriated Balance
GPE-300	General Plant Projects, Various Locations	$ ---	$ ---	$ 3,600	$ 3,900	$ 4,785	$ ---
96-G-302	Accelerator Improvements and Modifications, Various Locations	4,975	---	---	---	4,975	---
91-G-300	Relativistic Heavy Ion Collider, BNL	475,250	132,850	78,000	70,000	70,000	124,400
87-R-203	Continuous Electron Beam Accelerator Facility, CEBAF	313,200	295,610	16,590	1,000	0	0
Subtotal Line Item Projects		788,450	428,460	94,590	71,000	70,000	124,400
Total, Nuclear Physics Construction		$ ---	$ ---	$ 98,190	$ 74,900	$ 79,760	$ ---

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPE-300, General Plant Projects
Various locations

TEC: $4,785
TPC: $4,785

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Obligations	Costs
1996	$ 4,785	$ 4,785	$ 1,900
1997		0	2,100
1998		0	785

3. Narrative: General Plant Projects provide for the many miscellaneous alterations, additions, modifications, replacements, and non-major construction required at the Continuous Electron Beam Accelerator Facility, the Lawrence Berkeley Laboratory and the Massachusetts Institute of Technology (Bates Linear Accelerator Center). GPP projects focus on general laboratory facilities whereas the AIP projects focus on the technical facilities.

The FY 1996 General Plant Project funding will also support high priority ES&H activities identified in the Department's ES&H five-year plan.

These projects are required for the general maintenance, modification and improvement of the overall laboratory plant and include minor new construction, capital alterations and additions, and improvements to buildings and utility systems. These projects are essential for maintaining the productivity, increasing the operational cost effectiveness, and ensuring that necessary support services are available to the research program at the DOE-owned facilities.

A description and listing of the major items of work to be performed at the various locations is contained in the Construction Project Data Sheets. Some of these may be located on non-Government owned property. The following is a list of the proposed FY 1996 funding for the various locations:

Contin. Electron Beam Acc. Facility.....	$ 870
Lawrence Berkeley Laboratory.....	3,700
Massachusetts Institute of Technology (Bates Linear Accelerator Center).....	215
Total Estimated Cost.....	$ 4,785

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995 Enacted	FY 1996 Request
Construction	XXXX	$3,600	$3,900	$4,785

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-G-302, Accelerator Improvements and Modifications
Various locations

TEC: $4,975
TPC: $4,975

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Obligations	Costs
1996	$ 4,975	$ 4,975	$ 1,800
1997	0	0	2,500
1998	0	0	675

3. Narrative: Accelerator Improvement Projects provide for additions, modifications, and improvements to research accelerators and ancillary experimental facilities. The requested projects are necessary to maintain and improve reliability and efficiency of operations and to provide new experimental capabilities as required for execution of planned nuclear physics research programs. Funds for these projects are needed annually to provide increased performance levels and increased serviceability, thereby decreasing facility downtime, improving the productivity and cost effectiveness of the program.

A description and listing of the major items of work to be performed at the various locations is contained in the Construction Project Data Sheets. Some of these may be located on non-Government owned property. The following is a list of the proposed FY 1996 funding for the various locations:

Argonne National Laboratory.....	$ 500
Brookhaven National Laboratory (AGS/Tandem).....	1,300
Continuous Electron Beam Accelerator Facility...	2,575
Massachusetts Institute of Technology (Bates Linear Accelerator Center).....	200
Oak Ridge National Laboratory.....	400
Total Estimated Costs.....	$ 4,975

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995 Enacted	FY 1996 Request
Construction	XXXX	$ 0	$ 0	$ 4,975

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 91-G-300, Relativistic Heavy Ion Collider, Brookhaven National Laboratory — TEC: $ 475,250; TPC: $ 595,250

Start Date: 2nd Qtr. FY 1991 — Completion Date: 2nd Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1991	$ 15,000	- 1,500 a/	$ 13,500	$ 6,000
1992	49,350		49,350	23,265
1993	71,400	- 1,400 b/	70,000	60,839
1994	78,000		78,000	82,244
1995	70,000		70,000	90,000
1996	70,000		70,000	70,000
1997	65,000		65,000	61,000
1998	59,400		59,400	59,000
1999	0		0	22,902

a/ Reflects the reduction of funds resulting from the FY 1991 sequester and general reduction.
b/ Application of a portion of the FY 1993 General Science and Research general reduction of $30,000,000 for use of prior year balances.

3. Narrative: The Relativistic Heavy Ion Collider (RHIC) facility will be a unique, world-class research facility with opposing colliding beams that provide collision energies of 100 GeV/AMU per beam for heavy ions as massive as gold. RHIC will use the existing Alternating Gradient Synchrotron (AGS) and Tandem Van de Graaff complex as an injector. The new accelerator will be built in the existing Colliding Beam Accelerator (CBA) tunnel (3.8 km circumference) at BNL, and will utilize the experimental halls, support building, and liquid helium refrigerator from the partially completed CBA project.

RHIC will be dedicated to the study of nuclear matter at very high temperatures and densities where the quark-gluon degrees of freedom are expected to be directly revealed. The machine will accelerate ions with atomic masses spanning the periodic table, with the collision energies of 100 GeV/AMU for the heaviest ions, and even higher energies for lighter ions. In such collisions, experimenters will be able to study extended volumes of hadronic matter with energy densities more than ten times that of the nuclear ground state, thus creating in the laboratory conditions that are similar to those of the expanding universe moments after the Big Bang. Ultra-relativistic heavy ion collisions are probably the only means of producing such energy densities under controlled laboratory conditions, and offer a unique avenue for both nuclear and particle physicists to test theories of the strong interaction at the high energy density limit. This is the threshold at which hadronic matter is predicted to lose its identity as a collection of neutrons and protons, and to undergo a phase transition to a plasma of quarks and gluons.

Construction of RHIC will proceed in an expeditious manner, consistent with available funds. FY 1996 construction funds will be used for procurement of collider ring and detector components.

4. Total Project Funding (BA):

	Prior Years	FY 1994	FY 1995	FY 1996 Request	To Complete
Construction	$132,850	$78,000	$70,000	$70,000	$124,400
Capital Equipment	0	0	0	0	0
Operating Expenses	42,264	5,880	5,820	6,000	60,036

OVERVIEW

SUPERCONDUCTING SUPER COLLIDER (SSC)

The Superconducting Super Collider (SSC), a large proton-proton collider for basic scientific research was under construction near Waxahachie, Texas. The SSC was designed to become the world's preeminent particle accelerator facility for high energy physics research. Research at the SSC was expected to answer questions about the ultimate constituents of matter and energy.

The project was terminated by Congress in 1993 when it passed the FY 1994 Energy and Water Appropriations Bill (P.L. 103-126). Included in this bill was $640 million for the orderly termination of the SSC.

Following termination of the project, the SSC Project Office was assigned to the Oak Ridge Operations Office by the Secretary of Energy. Termination plans are being implemented under the direction of the SSC Project Director. The DOE termination plan is consistent with the FY 1994 appropriations legislation that terminated the SSC project. Consistent with the provisions of this legislation, DOE is: 1) terminating the SSC project in an orderly, cost-effective, environmentally sound, and safe manner; 2) developing a plan to maximize the value of the investment made in the project, including recommendations as to the feasibility of other uses of project assets; and 3) has worked closely with the employees and other interested parties to mitigate the impact of the termination. Key issues considered during the termination include: personnel impact; environmental, safety, and health risks; total cost control; terms of contract termination settlement; documentation and records management; disposition of personal and real property; site assessment; permit management; and alternate uses of site and facilities.

A Settlement Agreement was signed by the Department and the State of Texas in November 1994. This was an important step in the termination process, a necessary ingredient for the swift, efficient, and environmentally sound termination of the project. The agreement resolves claims made by the State, thereby avoiding litigation, and provides the basis on which the use and value of existing Super Collider assets can be maximized. It provides for an equitable distribution of property between the Department and the State, taking into account the respective Federal and State investment in the project.

Considerable effort has been made by the Department, in coordination with the Texas National Research Laboratory Commission (TNRLC), to consider how best to use the SSC assets in an effort to maximize the value of the investment made in the project. The Department and the State have coordinated their parallel investigations of potential on-site uses of major SSC assets and facilities. These studies have been peer-reviewed and the proposed uses generally found to be beneficial and feasible. Many of these projects, especially those related to education and the support of industry, are of primary interest to the State. The Department has reserved (until April) certain of the DOE-owned equipment and assets remaining after the Settlement which are critically needed for potential on-site activities, pending identification of funds by the potential users. Most of these assets are being made available to other DOE programs in order to maximize their value and usefulness.

The complex negotiations and detailed studies have necessarily taken time. The Department has, and will, move with all deliberate speed to arrive at a reasoned and thoughtful set of recommendations. A report on maximizing the value of the investment made in the SSC is being prepared and will be sent to the Congress and the President in May 1995.

It presently appears that implementation of the Settlement and the project termination process can be accomplished within existing SSC appropriations. The SSC termination activities continue to be on schedule and within the budget estimate. The amount of contingency available is relatively small, however, and there are still substantial uncertainties, especially regarding the close-out of large subcontracts and restoration of the site. The Department is making every effort to keep the termination costs within existing SSC appropriations. The Department does not anticipate making any special requests for additional appropriations to support future potential uses of assets at the SSC site.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF ENERGY RESEARCH
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Superconducting Super Collider (SSC)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
SSC Project					
Operating Expenses	$640,000	$0	$0	$0	$0
TOTAL	$640,000	$0	$0	$0	$0
Summary					
Operating Expenses	$640,000	$0	$0	$0	$0
Total Program	$640,000	$0	$0	$0	$0
Staffing (FTEs)	73	56	0	56	19

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977)

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH

OVERVIEW

GENERAL SCIENCE PROGRAM DIRECTION

This program provides the Federal staffing resources and associated funding to plan, direct, and manage a viable, high quality national program of basic research in the fields of high energy physics and nuclear physics in support of the Nation's goals to support basic scientific research and to maintain U.S. competitiveness. It supports the staff in the Office of the Associate Director for High Energy and Nuclear Physics, the High Energy Physics Division, the Nuclear Physics Division, and associated program and management support staff in the Headquarters. This program also provides program-specific staffing resources at the Chicago, Oakland, and Oak Ridge Operations Offices to support high energy and nuclear physics activities carried out by those offices.

The Department of Energy provides over 90 percent of the Federal support, and serves as the Executive Agent, for the Nation's High Energy Physics program. Over 85 percent of the total Federal support of basic nuclear physics research is provided through the Nuclear Physics program. The staff develop program plans and budgets and execute approved programs. They support, plan, and provide for construction, maintenance, and operation of the large facilities on which research in high energy physics and nuclear physics depends. They oversee the operation of large and complex accelerator facilities which are used by qualified physicists throughout the Nation, provide technical oversight of the high energy physics and nuclear physics research programs at 15 major laboratories and well over one hundred universities throughout the Nation, and interact with other Federal agencies. In carrying out these responsibilities, the staff funded by General Science Program Direction assess the basic research needs of these programs with the advice and assistance of the High Energy Physics Advisory Panel (HEPAP) and the DOE/NSF Nuclear Science Advisory Committee (NSAC), participate actively in their meetings, and provide program and administrative support for their operation. The staff work in close cooperation with the Oak Ridge Operations Office on Superconducting Super Collider (SSC) termination activities.

The staff also participate extensively in international collaboration and cooperative programs with Japan, Germany, CERN Laboratory (Geneva, Switzerland) member countries, China, the former Soviet Union, Spain, Italy, France, the Netherlands, and Canada.

Performance indicators are: efficiency and effectiveness of administrative and program activities, and effectiveness in support of departmental plans and policies.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

General Science Program Direction

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
General Science Program Direction					
Operating Expenses	$9,000	$10,400	$0	$10,400	$10,900
Total Program	$9,000	$10,400	$0	$10,400	$10,900
Summary					
Operating Expenses	$9,000	$10,400	$0	$10,400	$10,900
Total Program	$9,000	$10,400	$0	$10,400	$10,900
Staffing (FTEs)					
Headquarters	48	55	0	55	56
Field	27	33	0	33	33
Total Program	75	88 a/	0	88	89

Authorization: P.L. 95-91, "Department of Energy Organization Act."

a/ Revised request.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

General Science Program Direction

FY 1995 Appropriation	$ 10,400
- Adjustment	0
FY 1995 Adjusted	10,400
Personnel Compensation - Increase as a result of five additional full-time equivalents over the original FY 1995 budget, within-grade increases, and pay raises	+ 609
Personnel Benefits - increase commensurate with increased personnel compensation	+ 132
Contractual Services - reduced permanent change of station costs and administrative reductions	- 241
FY 1996 Congressional Budget Request	$ 10,900

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
GENERAL SCIENCE AND RESEARCH
(dollars in thousands)

KEY ACTIVITY SUMMARY

GENERAL SCIENCE PROGRAM DIRECTION

I. Preface: General Science Program Direction

This program provides the Federal staffing resources and associated funding to plan, direct, and manage a viable, high quality National program of basic research in the fields of high energy physics and nuclear physics to ensure U.S. competitiveness in basic research. It supports the staff in the Office of the Associate Director for High Energy and Nuclear Physics, the High Energy Physics Division, the Nuclear Physics Division, and associated program and management support staff both in the Headquarters and at Chicago, Oakland, and Oak Ridge Operations Offices. Performance indicators are: efficiency and effectiveness of administrative and program activities, and effectiveness in support of departmental plans and policies.

II. A. Summary Table: General Science Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Personnel Compensation	$ 5,215	$ 6,150	$ 6,759	$ 609
Personnel Benefits	1,091	1,404	1,536	132
Travel	794	835	835	0
Contractual Services	1,900	2,011	1,770	-241
Total, General Science Program Direction	$ 9,000	$ 10,400	$ 10,900	$ 500

II. B. Laboratory and Facility Funding Table: General Science Program Direction

All Other	$ 9,000	$ 10,400	$ 10,900	$ 500
Total, General Science Program Direction	$ 9,000	$ 10,400	$ 10,900	$ 500

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Science Program Direction			
Personnel Compensation	Provided funds for personnel compensation for 75 full-time equivalents (FTEs) in the Office of High Energy and Nuclear Physics and for related program and management support staff at Headquarters and in the field. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.	Provide funds for personnel compensation for 88 FTEs, an increase of 4 FTEs over the original FY 1995 budget as a result of internal redistribution to strengthen international activities. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs.	Provide funds for personnel compensation for 89 FTEs. Includes, for example, regular salaries, lump sum payments for unused annual leave, premium pay, and employee incentive awards programs. Provide for 5 FTEs over the original FY 1995 budget level, including one FTE for the Technical Leadership Development Program. Provide for pay increases resulting, for example, from normal within-grade increases and pay raises.
	The High Energy Physics staff provided continued oversight of the High Energy Physics program and of high energy accelerator centers at Brookhaven National Laboratory (BNL), Fermilab, and the Stanford Linear Accelerator Center (SLAC). Provided technical control and oversight for high energy physics research programs at nine major laboratories and managed more than 100 university research tasks. Provided ES&H oversight of the large and complex High Energy Physics facilities and research capabilities. Monitored contract management oversight and accountability. Managed B-Factory activities. Maintained liaison with SSC termination activities and began to determine the best alternative utilization of valuable Government facilities and equipment. Continue to oversee experimental and theoretical research and test-bed exploration of very promising new advanced accelerator concepts. Maintained foreign liaison for conduct of experiments at foreign accelerators and for oversight of the L3 detector. Continued oversight of the Fermilab Main Injector project.	Provide continued oversight of the High Energy Physics Program. Continue physics research management and accountability and contract management oversight. Continue to oversee the safe management, efficient operation and strong utilization of the large and complex High Energy Physics facilities and research capabilities. Manage increased B-Factory activities. Continue liaison with SSC termination activities. Oversee experimental and theoretical research carried out by university based scientists and test-bed exploration of very promising new advanced accelerator concepts. Maintain foreign liaison for conduct of experiments at foreign accelerators, for oversight of the L3 detector, and increased participation with CERN member countries on the Large Hadron Collider (LHC). Continue oversight of the Fermilab Main Injector project.	Provide continued oversight of the High Energy Physics Program. Continue physics research management and accountability and contract management oversight. Continue to oversee the safe management, efficient operation and strong utilization of the large and complex High Energy Physics facilities and research capabilities, including support for increased facility operations. Manage B-Factory activities. Continue liaison with SSC termination activities. Oversee experimental and theoretical research carried out by university based scientists and test-bed exploration of very promising new advanced accelerator concepts. Maintain foreign liaison for conduct of experiments at foreign accelerators, for oversight of the L3 detector, and increased participation with CERN member countries on the Large Hadron Collider (LHC). Continue oversight of the Fermilab Main Injector project.

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III. General Science Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	The Nuclear Physics staff provided technical oversight of the Nuclear Physics research programs at 12 national laboratories. Managed more than 150 active grants and numerous research proposals and provided technical and project management oversight for construction projects, including oversight of operational readiness reviews of the Continuous Electron Beam Accelerator Facility (CEBAF). Supported construction of the Relativistic Heavy Ion Collider (RHIC) at BNL, including support of university participation in detector design and fabrication, and major equipment projects, including Gammasphere and the joint U.S./Canadian SNO detector. Continued ES&H oversight capability for the safe operation or phase-down of complex accelerator facilities, including the Clinton P. Anderson Meson Physics Facility (LAMPF). Continued to support the Nuclear Theory Institute. Continued to support ongoing R&D programs at university facilities and oversee a significant university user experimental research program. Continued to manage the Nuclear Data program.	Provide continued oversight of the Nuclear Physics program. Continue oversight of international cooperative efforts in the Nuclear Physics program. Continue to oversee the safe operation or phase-down of complex accelerator facilities and completion of CEBAF construction and preparation for operations. Continue to support and oversee the Nuclear Theory Institute. Continue to support construction of RHIC and university participation in detector design and fabrication at RHIC. Continue to support ongoing R&D programs at university facilities and oversee a significant university user experimental research program. Continue to manage the Nuclear Data program.	Provide continued oversight of the Nuclear Physics program. Continue oversight of international cooperative efforts in the Nuclear Physics program. Continue to oversee the safe operation or phase-down of complex accelerator facilities. Provide oversight of the CEBAF laboratory and operation of the accelerator for research. Continue to support and oversee the Nuclear Theory Institute. Continue to support construction of RHIC and university participation in detector design and fabrication at RHIC. Continue to support ongoing R&D programs at university facilities and oversee a significant university user experimental research program. Continue to manage the Nuclear Data program.
	Provided program and management support in the areas of budget and finance, personnel administration, acquisition and assistance, policy review and coordination, information resources management, and construction management support.	Continue to provide program and management support as in FY 1994.	Continue to provide program and management support as in FY 1995.

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III. General Science Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation (Cont'd)	Provided direct program support at Chicago Operations Office, including ES&H and financial support at Batavia Area Office for oversight of Fermilab and at Brookhaven for RHIC project support.	Provide additional direct program support at Chicago Operations Office, specifically at Batavia Area Office and in support of RHIC at Brookhaven Area Office.	Continue to provide direct program support at Chicago Operations Office, at Batavia Area Office and in support of RHIC at Brookhaven Area Office.
	Provided to the Oak Ridge Operations Office on-site technical and administrative support for CEBAF.	Provide to the Oak Ridge Operations Office on-site technical and administrative support for CEBAF.	Continue to provide to the Oak Ridge Operations Office on-site technical and administrative support for CEBAF.
	Provided direct program support at Oakland Operations Office for the Stanford Site Office. Supported B-Factory activities.	Continue to provide program staff support to Oakland Operations Office for the Stanford Site Office.	Continue to provide program staff support to Oakland Operations Office for the Stanford Site Office.
	$ 5,215	$ 6,150	$ 6,759
Personnel Benefits	Funded civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.	Fund civilian personnel benefits to cover the Civil Service Retirement and Disability Funds, Federal Employees Retirement System, health benefits and life insurance funds, permanent change of station expenses, and unemployment compensation.
	$ 1,091	$ 1,404	$ 1,536
Travel	Provided funds for official domestic, international, and local travel. Funded transferee/new hire personnel for permanent change of station transportation.	Provide funds for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.	Provide funds for official domestic, international, and local travel. Fund transferee/new hire personnel for permanent change of station transportation.
	$ 794	$ 835	$ 835

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III. General Science Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Contractual Services	Provided a variety of program support such as printing and editing and contractual services, including, for example, ES&H support, relocation services, timesharing on various information systems and communication networks, Automated Office Support Systems (AOSS) workstations, and management support to the field offices.	Continue to provide the variety of contractual support required in FY 1994. Provide for increased permanent change of station costs.	Continue at a reduced level the variety of contractual support required in FY 1995.
	$ 1,900	$ 2,011	$ 1,770
General Science Program Direction	$ 9,000	$ 10,400	$ 10,900

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Uranium Supply and Enrichnent Activities

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DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

URANIUM SUPPLY AND ENRICHMENT ACTIVITIES

VOLUME 3

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Uranium Supply and Enrichment Activities					
Operating Expenses	320.3	320.3	79.0	79.0	91.6
Plant and Capital Equipment	0.9	0.9	10.3	10.3	11.3
Subtotal, Uranium Enrichment	321.2	321.2	89.3	89.3	102.9
Revenues	-70.0	-70.0	—	—	-34.9
Use of prior year balances and other adjustments	-116.1	-116.1	-16.1	-16.1	-25.7
Total, Uranium Enrichment Activities	135.1	135.1	73.2	73.2	42.3

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Uranium Supply and Enrichment Activities

For expenses of the Department of Energy in connection with operating expenses; the purchase, construction, and acquisition of plant and capital equipment and other expenses incidental thereto necessary for [residual] uranium supply and enrichment activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.) and the Energy Policy Act (Public Law 102-486, section 901), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; purchase of electricity as necessary[; purchase of passenger motor vehicles (not to exceed 11), $73,210,000], $77,195,000, to remain available until expended: *Provided*, That revenues received by the Department for [residual] uranium [enrichment activities] programs and estimated to total [$9,900,000] $34,903,000 in fiscal year [1995] 1996, shall be retained and used for the specific purpose of offsetting costs incurred by the Department for such activities notwithstanding the provisions of [section 3302(b) of title 31, United States Code] 31 U.S.C. 3302(b) and 42 U.S.C. 2296(b)(2): *Provided further*, That the sum herein appropriated shall be reduced as revenues are received during fiscal year [1995] 1996 so as to result in a final fiscal year [1995] 1996 appropriation estimated at not more than [$63,310,000] $42,292,000.

EXPLANATION OF CHANGE

Deletes language which had specific application to FY 1995. That language is not required for the FY 1996 budget proposal. Adds language appropriating revenues to the Department of Energy from sales of excess uranium inventories to offset this appropriation.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES

OVERVIEW

URANIUM PROGRAMS

The Office of Uranium Programs is responsible for accomplishing several key Departmental missions, including: (1) leading efforts with other Federal agencies to increase confidence that the low enriched uranium being purchased by the United States from Russia has been derived from highly enriched uranium (HEU) removed from dismantled nuclear weapons; (2) transferring enrichment-related technologies and forming technology partnerships to bolster U.S. industrial competitiveness; (3) overseeing the Department's continuing interests in the operation of the Portsmouth and Paducah gaseous diffusion plants managed by the United States Enrichment Corporation (USEC) and representing the Department's interests in transactions with USEC; (4) developing effective and efficient means of using and/or disposing of depleted uranium; and (5) leading the Department's uranium revitalization efforts. In order to carry out these responsibilities, the Office of Uranium Programs requires funding to support a wide array of special skills and expertise in four primary locations: Germantown, Maryland; Oak Ridge, Tennessee; Piketon, Ohio; and Paducah, Kentucky. Fiscal Year 1996 will be an extremely challenging year for Uranium Programs and will demand expertise in the fields of environmental, safety and health; nuclear regulatory oversight; financial and market analysis; nuclear physics and engineering; radioactive, hazardous and mixed waste management; facilities maintenance and security; logistics; and litigation support.

Uranium Programs is responsible for implementing the Department's efforts to increase U.S. confidence that Russian low enriched uranium being purchased by USEC is derived from Russian HEU in accordance with the agreements signed in February 1993. Uranium Programs has been providing the technical expertise to the Department of State, Arms Control Disarmament Agency, Defense Nuclear Agency, Nuclear Regulatory Commission (NRC), and Department of Defense in negotiating protocols dealing with "transparency measures" that will allow U.S. on-site inspection of Russian uranium processing facilities. By FY 1996, the Department expects to provide a fully equipped rotational staff of on-site inspectors in Russia to monitor Russian uranium processing facilities. Transparency measures will continue over the 20-year term of the agreement between the United States and the Russian Federation and will help to assure the nonproliferation of special nuclear material throughout the world.

Uranium Programs will help achieve the Administration's goals of increased economic security and industrial competitiveness by entering into partnerships that will develop commercial applications for the gaseous diffusion barrier (membrane technology) and advanced gas centrifuge technology. Based on industry participation, several market-oriented applications in the separation and filtration, biotechnology and medical, and automotive and electronic fields, have been identified, such as, cleanup of industrial and environmental waste, large scale production of anti-sense drugs for human therapeutic treatment, and use of advanced motors and flywheels in electric vehicles and air conditioning systems. We are developing cooperative research and development agreements with industry partnerships of matched, cost-shared projects for commercial market driven products that have potential of enhancing the United States in industry competitiveness and improving U.S. economic performance. Preliminary market survey and industrial assessments forecast new product sales potential over $500,000,000 per year by the Year 2000 with corresponding increases in new direct jobs of over 30,000 per year.

Uranium Programs continues to manage and assure nuclear and occupational safety, and environmental and health requirements for all operations at the diffusion plants until full regulatory oversight is assumed by NRC and the Occupational Safety and Health Administration. By FY 1996, it is expected that NRC will have taken on the majority of these responsibilities. However, Uranium Programs will be required to continue to oversee and fund initial nuclear safety non-compliances and to monitor physical plant conditions since the Department will continue to own the plants and ultimately be responsible for a majority of their decontamination and decommissioning.

In addition, Uranium Programs continues to be responsible for correction of environmental liabilities at the diffusion plants identified prior to the transfer of enrichment operations to USEC. In FY 1996, Uranium Programs will continue correcting safety and health deficiencies and lessen environmental concerns by bringing the facilities into compliance with existing Federal and State regulations for air, water, and waste. Efforts include maintaining collection and containment systems for polychlorinated biphenyls as required by the Toxic Substances Control Act and in accordance with the Federal Facility Compliance Agreement signed with the U.S. Environmental Protection Agency.

Uranium Programs also remains responsible for the maintenance and security of facilities at the Portsmouth and Paducah sites that are not connected with uranium enrichment operations transferred to USEC. To assure continued nuclear safety and safeguards and security during FY 1996 at the Portsmouth highly enriched uranium facilities, Uranium Programs will continue to manage the surveillance and maintenance required to maintain the integrity of HEU equipment prior to its decontamination and decommissioning. Additional Departmental responsibilities require Uranium Programs to administer the electric power contracts with the utilities that supply power to the gaseous diffusion plants for both Department of Energy use and the enrichment of uranium by USEC. These power contracts, along with the management and operating contract for the plants, have pre-existing financial liabilities that require the Department to continue to fund the post-retirement life and medical costs of their workers.

Uranium Programs continues to manage the depleted uranium hexafluoride inventories in a manner consistent with environmental mandates and best management practices. Major efforts will continue in FY 1996 to upgrade the Department's handling and management of depleted uranium hexafluoride. Over 560,000 metric tons remain as a result of 40 years of enriching uranium for both defense and commercial nuclear purposes. The programmatic requirements for managing depleted uranium hexafluoride are expected to expand as Uranium Programs seeks to identify the best approach through the National Environmental Policy Act process for the long-term disposition of material contained in approximately 47,000 cylinders at the Oak Ridge, Portsmouth, and Paducah sites.

Finally, the Energy Policy Act of 1992 created new responsibilities for the Department in the area of ensuring a strong domestic source of natural uranium. Uranium Programs has the ongoing responsibility for uranium revitalization including reporting annually to Congress on actions taken with respect to encouraging sales and exports for domestic uranium. Uranium Programs has worked in close coordination with the domestic uranium industry, the Department of Commerce, the U.S. Trade Representative, and other governmental organizations. Uranium Programs will also establish a broad program designed to work with the electric utility regulatory authorities to encourage consideration of uranium import independence in their rate-making decisions. A report to Congress will be required on the progress of the Secretary in encouraging the consumption of domestic uranium here and abroad.

OUTPUT MEASURES

(1) Reduce the HEU stockpile at the Portsmouth site by 2,000 kilograms uranium in FY 1996 by blending it with LEU to produce low assay reactor grade fuel.

(2) The Departmental pre-existing liabilities, estimated to cost over $200,000,000, will be reduced by $18,500,000 in FY 1996 by reimbursing the management and operating contractor and the power supplier for post-retirement life and medical costs for retirees who supported the uranium enrichment program before July 1, 1993.

(3) Complete all remaining corrective actions that were identified prior to July 1993 and maintain the number of new notices of violation for environmental conditions to no more than three per site.

(4) Sign 7 Cooperative Research and Development Agreements (CRADA) with industry partnerships for a total of 15 CRADAs to transfer uranium technologies to result in new commercial market-oriented products and thereby bolster U.S. industry competitiveness and economic performance.

(5) Carry out 10 inspections in Russia to increase confidence that the low enriched uranium being bought by the United States has been derived from highly enriched uranium removed from dismantled Russian nuclear weapons.

(6) Complete approximately 25 percent of the cylinder restacking efforts in the depleted uranium hexafluoride management program.

(7) Complete 100 percent of the inspections on the depleted uranium hexafluoride cylinders that are heavily oxidized and 25 percent of the remaining cylinder inventory at the sites.

(8) As part of the nuclear safety compliance corrective actions program, the Safety Analysis Report upgrades at the sites will be completed in FY 1996.

(9) A report concerning all Uranium Revitalization activities will be prepared annually and submitted to the appropriate committees of Congress as required by the Energy Policy Act of 1992.

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Uranium Programs

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Uranium Programs					
Operating Expenses	$ 320,297	$ 78,993	$ 0	$ 78,993	$ 91,598
Capital Equipment	100	1,000	0	1,000	2,100
Construction	814	4,102	5,250	9,352	9,200
Subtotal, Uranium Programs	$ 321,211	$ 84,095	$ 5,250	$ 89,345	$ 102,898
Use of Prior Year Balances					
Operating Expenses	$ -115,305	$ -4,783 a/	$ -5,250 a/	$ -10,033	$ -25,150 b/
Construction	-814	-6,102	0	-6,102	-553
Subtotal, Use of Prior Year Balances	$ -116,119 a/	$ -10,885	$ -5,250	$ -16,135	$ -25,703
TOTAL	$ 205,092	$ 73,210	$ 0	$ 73,210	$ 77,195
Summary					
Operating Expenses	$ 204,992	$ 74,210	$ -5,250	$ 68,960	$ 66,448
Capital Equipment	100	1,000	0	1,000	2,100
Construction	0	-2,000	5,250	3,250	8,647
Total Program	$ 205,092	$ 73,210	$ 0	$ 73,210	$ 77,195
Staffing (FTEs)	66	54	0	54	54

a/ The Department's September 30, 1993 request to reprogram funds in this account proposed to use prior year balances to support the transfer of functions to the United States Enrichment Corporation (USEC) and to provide for liabilities left with the Department after the formation of the USEC. $74,119,000 of the reprogramming funds were expended by DOE in FY 1994 and $9,250,000 will be expended in FY 1995 for critical activities, e.g., nuclear safety compliance efforts, Occupational Safety and Health Act upgrades, environmental corrective actions, payment of post-retirement benefits, etc.

b/ As a result of a December 15, 1994 final agreement with the USEC on asset transfers, $25,000,000 of reprogramming funds will no longer be required for nuclear safety compliance activities. These funds will be used to reduce the amount of new appropriations required in FY 1996.

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(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Uranium Programs

FY 1995 Appropriation	$ 73,210
- Use of Prior Year Balances - Prior year balances identified in the FY 1995 Congressional Request and the FY 1995 Amendment used to support program operations	10,885
- Adjustment - Prior year balances released from pending reprogramming (93-R-32) for critical activities	5,250
FY 1995 Uranium Programs Activity Level	$ 89,345
<u>Uranium Programs</u>	
Operating expenses increased $12,605,000 primarily as follows:	
- Highly Enriched Uranium Equipment Shutdown and Inventory Disposition -- decreased $5,200,000 because the program is nearing completion except for surveillance and maintenance activities	-5,200
- Nuclear Safety Compliance Corrective Actions -- increased $10,000,000 to complete the Safety Analysis Reports at the Portsmouth and Paducah plant sites	+10,000
- Depleted Uranium Hexafluoride Cylinders and Maintenance -- increased $17,315,000 to accelerate the program to address State environmental issues	+17,315
- Corrective Actions -- decreased $11,000,000 due to completion of some corrective actions	-11,000
- Technology Partnerships -- increased $3,700,000 to provide for several cooperative research and development agreements	+3,700
- Pre-existing Liabilities -- decreased $4,181,000 primarily due to projected lower post-retirement life and medical costs	-4,181
- All Other	+1,971
Capital equipment increased $1,100,000 primarily due to additional requirements associated with technology partnerships activities	+1,100
Construction decreased $152,000 primarily associated with decreased funding for cylinder and storage yards partially offset by increased funding for construction of a cylinder refurbishment facility	-152
FY 1996 Uranium Programs Activity Level	102,898
Use of prior year balances	-25,703
FY 1996 Congressional Budget Request	$ 77,195

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(dollars in thousands)

KEY ACTIVITY SUMMARY

URANIUM PROGRAMS

I. Preface: Uranium Programs

Fiscal Year 1996 will be a challenging year for Uranium Programs as the predominant focus of the program shifts from the residual uranium enrichment activities to Departmental missions including: Russian transparency measures, technology partnerships, depleted uranium management, and uranium revitalization. The Office of Uranium Programs continues in FY 1996 to fund and manage the Department's landlord responsibilities associated with the operation of the gaseous diffusion plants.

The FY 1996 budget provides for the safeguards and security costs and ongoing surveillance and maintenance of the shutdown areas required to maintain the integrity of the highly enriched uranium (HEU) equipment prior to decontamination and decommissioning. The FY 1996 budget also provides for upgrading the existing Safety Analysis Reports for Paducah and Portsmouth in accordance with current nuclear safety analysis standards.

The FY 1996 budget also includes funding for the maintenance and security of facilities at the Portsmouth and Paducah sites that are not connected with uranium enrichment operations transferred to USEC. Funding is also provided in FY 1996 for the Departmental obligations associated with the post-retirement life and medical costs that must be reimbursed to the management and operating contractor for uranium enrichment retirees and to the Ohio Valley Electric Corporation (OVEC) for retired power supplier employees. In addition, the Department is also responsible for the cost of defending legal actions and any settlements resulting from claims of liability arising from the two site operations prior to July 1, 1993.

Uranium Programs is responsible for implementing the Department's efforts to increase U.S. confidence that Russian low enriched uranium being purchased by USEC is derived from Russian HEU in accordance with the agreements signed in February 1993. The FY 1996 budget provides for the continued efforts in transparency measures involving special monitoring visits to Russian uranium processing facilities and the establishment of a continuous presence monitoring office at one of the Russian uranium processing facilities in accordance with the terms of the signed agreement.

The FY 1996 budget also provides funding to pursue technology partnerships with private industry and other government agencies. The planned technology partnerships involve transfer of Department technologies of gaseous diffusion and advanced gas centrifuge technologies to non-uranium enrichment applications. Over 40 U.S. private industries have expressed interest in technology partnerships where private industry contributes matched cost-shared funding to accomplish a cooperative research and development agreement and joint work statement resulting in a commercial product that has near term market-oriented applications and sales. The technology partnerships encompass the private U.S. industry sectors of manufacturing and process, chemical, petrochemical, pharmaceutical, biotechnology, separation and filtration, and health care. Interagency partnerships have resulted in several Memoranda of Understanding and may result in activities with the U.S. Environmental Protection Agency, Department of Defense, National Institutes of Health, Centers for Disease Control, Department of Interior, Department of Transportation, and National Aeronautics and Space Administration. The economic benefits of technology partnerships include enhancing U.S. industry competitiveness and productivity; creation of new product sales; increasing gross domestic product; decreasing trade imbalance; creation of new U.S. businesses; and creation of new jobs.

Uranium Programs continues to be responsible for the correction of environmental liabilities at the diffusion plants identified prior to the transfer of the enrichment operations to USEC. The Department has 560,000 metric tons of depleted uranium hexafluoride (DUF6). The FY 1996 budget provides for the continuation of the environmental impact statement (EIS), including disposition options, and the acceleration of a depleted uranium hexafluoride management program to assure the safe handling and storage of DUF6.

I. Uranium Programs (Cont'd)

Also included in this FY 1996 budget request is funding for salaries, benefits, travel, and contractual services for full-time equivalent Departmental personnel to manage the Uranium Programs including substantial travel costs associated with transparency measures. Responsibilities related to the Uranium Programs functions not discussed above include: administration of the power contracts with OVEC and Electric Energy Inc. (power costs to run the gaseous diffusion plants are reimbursed by USEC); direction of warehousing activities at the Portsmouth site including the accountability, storage and rearrangement of uranium-bearing materials stored on the plant site; environmental safety and health oversight, occupational safety and health oversight, other regulatory activities of leased and non-leased facilities (regulatory oversight costs associated with leased facilities will be reimbursed by the USEC); and compliance with related Departmental Orders; administration of the lease associated with the gaseous diffusion facilities (costs for lease administration are reimbursed by the USEC); non-investment Energy Policy Act of 1992 required activities under Title X associated with uranium revitalization; and support to other Departmental programs responsible for the Uranium Enrichment Decontamination and Decommissioning Fund, as required. In addition, this budget includes funding for program management services necessary to support Departmental staff at Headquarters and Oak Ridge in their management of Uranium Programs. Finally, the FY 1996 budget provides funding for capital equipment and construction to support Uranium Programs functions.

II. A. Summary Table: Uranium Programs

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
TVA Payment	$ 158,373	$ 0	$ 0	$ 0
Highly Enriched Uranium Equipment Shutdown and Inventory Disposition	63,100	9,900	4,700	-5,200
Occupational Safety and Health Act (OSHA) Compliance	5,630	0	0	0
Nuclear Safety Compliance Corrective Actions	20,826	0	10,000	10,000
Maintenance of Leased and Non-Leased Facilities	10,578	14,840	14,306	-534
Atomic Vapor Laser Isotope Separation (AVLIS)	7,403	0	0	0
Technology Partnerships	2,695	2,500	6,200	3,700
Pre-existing Liabilities	22,860	25,081	20,900	-4,181
Transparency Measures	3,200	7,343	7,200	-143
Depleted Uranium Hexafluoride Cylinders and Maintenance	0	0	17,315	17,315
Declassification of Documents, Materials, and Systems	0	0	412	412
Corrective Actions	18,100	12,000	1,000	-11,000
Program Management Services	3,932	3,729	3,720	-9
Program Direction				
Salary	2,882	2,404	3,770	1,366
Benefits	565	536	867	331
Contractual Services	0	334	540	206
Travel	153	326	668	342
Subtotal, Program Direction	$ 3,600	$ 3,600	$ 5,845	$ 2,245
Uranium Programs - Capital Equipment	$ 100	$ 1,000	$ 2,100	$ 1,100
Uranium Programs - Construction	814	9,352	9,200	-152
Total, Uranium Programs	$ 321,211	$ 89,345	$ 102,898	$ 13,553

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II. B. Laboratory and Facility Funding Table: Uranium Programs

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (West)	$ 70	$ 0	$ 0	$ 0
Brookhaven National Lab	29	200	0	-200
K-25 Site	37,098	11,085	31,600	20,515
Lawrence Livermore National Lab	7,595	5,507	7,300	1,793
Los Alamos National Laboratory	154	513	0	-513
New Brunswick Lab	22	0	0	0
Oak Ridge Operations Office	171,477	18,921	9,897	-9,024
Oakland Operations Office	1,196	0	0	0
Pacific Northwest Lab	16	100	0	-100
Paducah Gaseous Diffusion Plant	7,727	15,086	23,404	8,318
Portsmouth Gaseous Diffusion Plant	94,403	32,495	22,429	-10,066
Sandia National Laboratories	44	557	0	-557
Washington Headquarters	1,380	4,881	8,268	3,387
Total, Uranium Programs	$ 321,211	$ 89,345	$ 102,898	$ 13,553

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Uranium Programs			
TVA Payment	A capacity charge for power not purchased of $158,373,000 was paid to TVA. This is the final payment to TVA. $ 158,373	No activity. $ 0	No activity. $ 0
Highly Enriched Uranium Equipment Shutdown and Inventory Disposition	Highly enriched uranium (HEU) is defined as uranium enriched in the U-235 isotope to greater than 20 percent. HEU was used as Naval Reactor fuel to propel nuclear powered vessels, for nuclear weapons, and in foreign programs. An oversupply of HEU became evident with the end of the cold war and large Navy stockpiles of fuel; therefore in November 1991, the Secretary of Energy suspended HEU production and in January of 1993, decided to shutdown the HEU production capability at the Portsmouth Gaseous Diffusion Plant. Funding for this activity includes all efforts required to suspend HEU production and to permanently shutdown the HEU equipment, including the power required to operate the equipment while treatment gases remove uranium deposits from the inside of the cascade equipment. Activities completed include the suspension of HEU production, stopping of cascade feeds for HEU, dropping of power support to HEU production upflow from low enrichment facilities, and removal of the in-process gaseous inventory. Remaining activities include nuclear criticality safety and nuclear materials control, continued uranium-bearing deposit removal, and accountability concerns that will require surveys and equipment cleanup	Same activity as FY 1994. The decrease in funding is primarily due to funding being provided in the Naval Reactors Development budget under the Materials Support and Other Defense Programs appropriation account and also due to nearing completion of shutdown and inventory disposition.	Funding for this activity includes surveillance and maintenance of the shutdown cells in the process building beginning in FY 1996. This effort includes maintaining the automated buffering system, conducting periodic non-destructive assay surveys to ensure against unacceptable migration of remaining uranium deposits, performing security checks of shutdown equipment and alarm systems, and performing operator checks and essential building maintenance. The shipment of uranium oxides will continue until mid-FY 1996, therefore, funding also provides for safeguarding the HEU material while on the Portsmouth site.

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Highly Enriched Uranium Equipment Shutdown and Inventory Disposition (Cont'd)	activities. Funding also provided for safeguarding the HEU material while on the Portsmouth site. The plan for the disposition of all of the HEU inventory at the Portsmouth site involves the shipment of non-uranium hexafluoride (UF6) inventories, uranium oxide and uranium nitrate hexahydrate, to the Y-12 plant for storage and potential use. The uranium nitrate hexahydrate shipments were completed in March 1994. The shipping efforts for the uranium oxides will be completed by mid-FY 1996. Approximately 13,000 kilograms of highly enriched UF6 will be temporarily stored on-site pending the blending by DOE to produce low enriched uranium (LEU) product for USEC in accordance with a memorandum of agreement related to the transfer of functions and activities from the Department to USEC that was signed on December 15, 1994.		
	$ 63,100	$ 9,900	$ 4,700
Occupational Safety and Health Act (OSHA) Compliance	The Energy Policy Act of FY 1992 holds the Department responsible for all liabilities attributable to operations of the uranium enrichment enterprise before July 1, 1993. This includes correction of OSHA violations. As part of the lease agreement between USEC and the Department of Energy (DOE), it is agreed that the Department will make a one-time payment of $35,000,000 in settlement of the Department's funding liability for those pre-existing OSHA noncompliances. This activity was not identified in time to be included in the FY 1994	Same activities as provided for in FY 1994. As part of the FY 1993 reprogramming request, $29,730,000 has been set aside for transfer to USEC in accordance with a memorandum of agreement related to the transfer of functions and activities from the Department to USEC that was signed on December 15, 1994.	No activity.

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Occupational Safety and Health Act (OSHA) Compliance (Cont'd)	Congressional budget. Therefore, an FY 1993 reprogramming request has been proposed to provide funding for this activity. Pending approval of this request, $5,630,000 has been released for critical activities.		
	$ 5,630	$ 0	$ 0
Nuclear Safety Compliance Corrective Actions	The Energy Policy Act of FY 1992 holds the Department responsible for all liabilities attributable to operation of the uranium enrichment enterprise before July 1, 1993. This includes nuclear safety compliance. As part of the lease agreement between USEC and DOE, it is agreed that the Department will fund the nuclear safety compliance program while USEC manages these corrective actions. Included in the safety compliance program are the Safety Analysis Report (SAR) upgrades for both sites. These SARs will be upgraded in accordance with current nuclear safety analysis standards to ensure the safety of the gaseous diffusion plant operations and that the facilities at the sites are adequately assessed, evaluated, and documented. In addition, these upgrades will establish a technical basis for upgrades, Technical Safety Requirements (TSR), and document risks of operating the plants for risk-reduction management decisions. In consonance with the Energy Policy Act of 1992, once the diffusion plants receive NRC certification, the Nuclear Regulatory Commission will begin regulating the gaseous diffusion plants. These corrective actions and SAR upgrades are necessary to support the continued safe	Same activities as provided for in FY 1994. As part of the FY 1993 reprogramming request, $11,000,000 has been set aside for transfer to USEC in accordance with a memorandum of agreement related to the transfer of functions and activities from the Department to USEC that was signed on December 15, 1994.	Funding in FY 1996 provides for the completion of the Safety Analysis Reports at both plant sites.

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III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nuclear Safety Compliance Corrective Actions (Cont'd)	operation of the gaseous diffusion plants and for the future NRC oversight of the plants. As of the end of FY 1994, the majority of the SARs upgrade program activities pertaining to the leased facilities have been completed. Efforts for the non-leased facilities will continue in FY 1995. These activities were not identified in time to be included in the FY 1994 Congressional budget. Therefore, an FY 1993 reprogramming request has been proposed to provide funding for these activities in FY 1994. Pending approval of this request, $20,826,000 has been released for critical activities.		
	$ 20,826	$ 0	$ 10,000
Maintenance of Leased and Non-Leased Facilities	The Energy Policy Act of 1992 provided for USEC to lease from the Department the real property required for continued operation of the enrichment process. The USEC is responsible for the maintenance of the buildings and grounds covered under the terms of the lease. However, facilities not leased by USEC remain the responsibility of the Department. Activities include maintenance outside the perimeter fences, warehousing of uranium-bearing material including the storage, rearrangement, and shipment functions at the Portsmouth site, and maintenance support for six warehouses and several non-destructive assay laboratories. Also includes funding for maintenance	Same activities as provided for in FY 1994. In addition, funding provides for the maintenance of the polychlorinated biphenyls (PCB) containment and collection system recently completed under a line item project. As part of the acceleration of the depleted uranium hexafluoride management program to address State environmental issues, approximately 3,100 cylinders in contact with the ground will be restacked at Paducah, and the feasibility evaluation of responses to the public request for the long term depleted uranium hexafluoride management strategy selection will be completed. In addition, the public scoping (public meetings, implementation plan preparation) will	Same activities as provided for in FY 1994. However, beginning in FY 1996 funding for the depleted uranium hexafluoride cylinders activities is provided in the Depleted Uranium Hexafluoride Cylinders and Maintenance account. The decrease is primarily due to the funding for the depleted uranium hexafluoride cylinders activities being provided under a separate account. The decrease is partially offset by an increase in funding for maintenance of facilities.

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Maintenance of Leased and Non-Leased Facilities (Cont'd)	of infrastructure and other institutional requirements in support of the ongoing Departmental mission at the sites. The Department is also responsible for pre-existing conditions prior to July 1, 1993 associated with the depleted uranium hexafluoride management program, which includes the safety and reliability of the long-term storage for thousands of depleted uranium cylinders stored at the sites. In 1991, the Office of Nuclear Energy identified deficiencies in the management of depleted uranium hexafluoride cylinders at the gaseous diffusion plants. Inspections of these cylinders in 1991 identified storage yard deficiencies that accelerated the cylinder corrosion and that made adequate inspections impossible. This program involves maintaining the existing containment integrity of thousands of depleted uranium cylinders stored at the sites. Activities include: (1) cylinder stabilization that involves replacement of breached cylinders, application of protective coatings for corroded cylinders and restacking of approximately 8,000 cylinders in contact with the ground and 22,000 partially inaccessible cylinders; (2) surveillance and maintenance activities to include annual baseline cylinder inspections of 25 percent of the inventory, periodic risk-based inspections, and valve monitoring; and (3) technical assessments to include corrosion characterization and monitoring. In addition, the State of Ohio issued the first of four Notices of Violation (NOV) for long term depleted uranium hexafluoride in 1990. In 1994, the	be completed and preparation of the environmental impact statement will begin. A technology assessment and engineering analysis and design program will be initiated to support the environmental impact statement. As part of the FY 1993 reprogramming request, an additional $2,027,000 has been set aside for this activity. The increase for this account over FY 1994 is primarily related to the maintenance of the PCB containment and collection system.	

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Maintenance of Leased and Non-Leased Facilities (Cont'd)	Department approved a negotiating strategy to resolve the NOV that commits DOE to State and public involvement in current cylinder management and in the selection of a long term management strategy under the National Environmental Policy Act. FY 1994 activities for the long term depleted uranium hexafluoride management strategy involved planning, publication of a request of expressions of interest in material uses/management technologies, and internal scoping of the environmental impact statements. In addition, 4,600 of the cylinders in contact with the ground were restacked in FY 1994 at the sites. These activities were not identified in time to be included in the FY 1994 Congressional budget. Therefore, an FY 1993 reprogramming request has been proposed to provide funding for these activities. Pending approval of this request, $10,578,000 has been released for critical activities.		
	$ 10,578	$ 14,840	$ 14,306
Atomic Vapor Laser Isotope Separation (AVLIS)	On October 8, 1993, USEC and DOE signed an agreement for the continuation of the AVLIS program under the funding sponsorship of USEC. This initial agreement, including a subsequent 90-day extension through July 30, 1994, stipulated that DOE was responsible for all costs associated with AVLIS program termination. During this transition period, program termination was primarily limited to personnel dislocation costs. On July 12, 1994, USEC announced their decision to proceed with the	As part of the FY 1993 reprogramming request that has been proposed, $34,324,000 has been set aside for transfer to USEC in accordance with a memorandum of agreement related to the transfer of functions and activities from the Department to USEC that was signed on December 15, 1994.	No activity.

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Atomic Vapor Laser Isotope Separation (AVLIS) (Cont'd)	commercialization of the AVLIS technology. The responsibility to eventually terminate the AVLIS program will now be assumed by USEC.		
	$ 7,403	$ 0	$ 0
Technology Partnerships	Provides funding for the technology partnerships to commercialize Department developed uranium enrichment technologies for non-uranium enrichment commercial applications. The Department's inorganic membrane, used in the enrichment of uranium, is a technology adaptable to other commercial applications where liquid and gaseous compounds need separation and filtration. The current developed DOE membrane manufacturing process and the membrane used in the enrichment of uranium are classified. However, commercial membrane end-products that are unclassified are being developed with industry partnerships that have potential of multiple market oriented commercial applications. In pursuing the goals of technology partnerships, the Department has sought and obtained significant interests from such businesses as Fluor-Daniel, Alcoa, Phillips, Exxon, Texaco, Shell, Coors-Ceramics, Dow, Amoco, Pall, and several others for the use of the inorganic membrane in their processes and in new commercial applications. Several businesses have now committed to working with the Department even if the technology is classified and require export control. Industry is willing to commit to 50 percent cost-shared funding as required under the CRADA. Commercialization of	CRADAs selected in FY 1994 are planned to be signed early in calendar year 1995. A CRADA on Reverse Osmosis inorganic membrane for producing ultra-pure water for the pharmaceutical and bioprocessing industries has also been approved and will be funded and signed in FY 1995. The CRADA has enormous potential economic benefits to U.S. industry and provide control of microbes (germs) in water. The developed product will benefit and improve a broad range of industrial and domestic applications. Additional gaseous diffusion membrane and advance gas centrifuge technologies are to be reviewed with U.S. industry participation to select and award those potential applications that offer the greatest U.S. economic and societal benefits. A request for proposals will be issued in early CY 1995 and from those proposals additional CRADAs are expected to be signed. In addition, a small core technology development program is being initiated in support of technology partnership activities.	Some 50 industry market-oriented applications of gaseous diffusion membrane and advance gas centrifuge technologies have been identified and potential technology partnerships with U.S. private industry have reached the preliminary pre-negotiation phase of CRADAs and joint work statements. Approximately six to eight additional CRADAs are expected to be funded and signed in FY 1996. For example, advance gas centrifuge technologies have a wide range of industrial applications and U.S. private industry interest in technology partnerships. The following activities of joint work statements and preliminary CRADAs are planned. o Large Scale Biology, Inc., has several potential technology partnerships with potential collaboration with major pharmaceutical firms and other government agencies to develop a wide range of anti-sense and gene blocker human therapeutic drugs to arrest and eliminate most of the major viral diseases and other illnesses. The challenge is to scale these laboratory conceptual prototype designs to production equipment that will reliably produce large quantities of accurate, pure, and low cost drugs.

Program Activity	FY 1994	FY 1995	FY 1996
Technology Partnerships (Cont'd)	the membrane technology will enhance industry in the development of low cost and more efficient products such as Highly Efficient Particulate Air (HEPA) filters for hot ash removal in coal gasification, reverse osmosis techniques for desalination of water for ultra clean water for the electronic industry, liquid and solid waste separation/cleanup, photocatalytic membranes to separate and decompose organic compounds including hazardous waste, membranes to separate hydrogen (and other valuable compounds) from high temperature gasified coal and recycle of hydrogen for petroleum refinery feedstock, and ultra filtration for food and biotechnology industries. In addition, the advanced gas centrifuge technologies have attracted U.S. private industry interest and commitment for technology partnerships of cost-shared CRADAs. Applications in the biotechnology, power electronics, hand tool, manufacturing and automotive industries are being pursued. For example, in FY 1994, a CRADA was proposed with Large Scale Biology, Inc. to develop a process for large scale systems for producing human pharmaceutical and therapeutic anti-sense and gene blocker drugs that are low cost, reliable, and accessible to the public. The following four CRADAs were selected in FY 1994 for funding: (1) Hydrogen Separation in Olefin Production (2) Cleanable HEPA filter (3) Removal of Volatile Organic Compounds from Groundwater (4) Synthesizer for Gene Blockers		o The Department's axial gap permanent magnet motor technology has potential multiple applications and technology partnerships may include: electric hybrid vehicle; high efficiency electric driven automotive air conditioning; hand tools; and power electronics where high power, light weight, and low cost are major criteria. This technology will benefit the automotive, power electronic, hand tools manufacturing, and industrial sectors. o The composite manufacturing and construction industrial sector has expressed interest in the Department's centrifuge composite technology to produce high strength, low weight, and low cost material applications that have embedded sensors to measure the state of performance for a wide range of composite structures and materials used in bridges, roads, and buildings. o The centrifuge flywheel technology has attracted automotive and energy systems manufacturing industries. Use of flywheel technology has been demonstrated for applications in the electric automotive vehicles and electric backup power systems. o Preliminary plans are expected to be accomplished to open up centrifuge and membrane facilities, system modeling, test and evaluation equipment, and know-how to private U.S. industry sector for training of personnel, test and evaluation of applications/products, and system development of new products. Gaseous diffusion membrane applications

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III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Technology Partnerships (Cont'd)			for separation and filtration are numerous and have identified several industry technology partnerships. For example: o Membrane types include micro-filtration, ultra-filtration, namo-filtration, and reverse osmosis requiring liquid and gas separation from the angstrom to micron range of filtration. Contaminates, valuable compounds, and infectious diseases are being considered in future commercial product developments. o Application areas of the above membrane types include: drinking water, industrial water, brackish and waste water, pharmaceutical and medical, food and beverage, chemical separations, biotechnology, environmental, and weapon sites.
	$ 2,695	$ 2,500	$ 6,200
Pre-existing Liabilities	The Energy Policy Act of 1992 holds the Department responsible for all liabilities attributable to operation of the uranium enrichment enterprise before the July 1, 1993, transfer to USEC. This provides for post-retirement life and medical costs that must be reimbursed to the management and operating contractor, Martin Marietta Energy Systems, Inc. (MMES), for retirees who worked on the uranium enrichment program; and the post-retirement life and medical costs that must be reimbursed to OVEC for retired power supplier employees. Also provides for contractor legal fees associated with 20 ongoing legal actions ranging from $100,000 workers	Same activity as FY 1994. However, because the outcome of lawsuits is difficult to predict with accuracy, the budget does not provide funding for settlement of lawsuits, only the legal fees. As part of the FY 1993 reprogramming request, an additional $1,940,000 has been set aside for this activity. The increase is primarily due to higher payments to OVEC for post-retirement life and medical costs.	Same activity as FY 1994. However, because the outcome of lawsuits is difficult to predict with accuracy, the budget does not provide funding for settlement of lawsuits, only the legal fees. Funding for the declassification activities is provided in the Declassification of Documents, Materials, and Systems account. The decrease is primarily due to projected lower post-retirement life and medical costs.

1298

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Pre-existing Liabilities (Cont'd)	compensation cases to a $1,200,000,000 environmental class action suit. In addition, provides for several settlements in which judgements were made against the contractor. Also provides for costs associated with declassifying documents, materials, and systems related to Departmental missions. The full extent of these liabilities was not known in time to be included in the FY 1994 Congressional budget. Therefore, an FY 1993 reprogramming request has been proposed to provide additional funding for these liabilities. Pending approval of this request, $7,568,000 has been released for critical activities.		
	$ 22,860	$ 25,081	$ 20,900
Transparency Measures	Under a contract between the United States and the Russian Federation signed on January 14, 1994, low enriched uranium will be purchased from the Russian Ministry of Atomic Energy over a 20 year period. This contract calls for a monitoring program to increase confidence that the low enriched uranium purchased by the United States is obtained by blending down highly enriched uranium. This monitoring program will include inspections of the MINATOM facilities consistent with a protocol agreement signed on March 18, 1994 by the Department and Russia. Transparency measures provides funding for planning and development of	Same activities as FY 1994. As part of the FY 1993 reprogramming request, an additional $3,516,000 has been set aside for this activity. The increase in funding is due to rotational inspection teams being established and monitoring and verification methods implemented. These activities are in conjunction with the planned start of processing of highly enriched uranium into low enriched uranium that will be delivered to the United States. Also provides funding for the purchase or lease of housing for monitors in the Russian Federation, if necessary, and if agreements to be negotiated with the	Same activities as FY 1994. Decrease is primarily due to a majority of activities associated with implementation of an on-site inspection team being completed in FY 1995.

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transparency Measures (Cont'd)	verification methods; travel, transportation and related expenses for Russian Federation representatives; project management and data analysis; training costs; allowable entertainment expenses; support of the initial fielding team in the Russian Federation; rental and/or procurement of equipment; and maintenance expenses. An FY 1993 reprogramming request has been proposed to provide funding to begin this program. Pending approval of this request, $3,200,000 has been released for critical activities.	Russians require, the integration of material control and accountability (MC&A) systems at the MINATOM facilities. Funding associated with implementation of acceptable MC&A systems will be offset by savings from elimination of the need for other transparency measures.	
	$ 3,200	$ 7,343	$ 7,200
Depleted Uranium Hexafluoride Cylinders and Maintenance	Funding is provided in the Maintenance of Leased and Non-Leased Facilities account.	Funding is provided in the Maintenance of Leased and Non-Leased Facilities account.	Provides for the continued acceleration of the depleted uranium hexafluoride management program to address State environmental issues. In 1990, the State of Ohio issued the first of four Notices of Violation (NOV) for long term depleted uranium hexafluoride storage. In 1991, the Office of Nuclear Energy identified storage yard deficiencies that accelerated the depleted uranium hexafluoride cylinder corrosion and that made adequate inspections impossible. The program is designed to correct deficiencies and involves maintaining the existing containment integrity of thousands of depleted uranium cylinders stored at the sites. Activities include: (1) cylinder stabilization that involves replacement of breached cylinders, application of protective coatings for corroded cylinders and restacking of approximately 22,000 partially inaccessible cylinders;

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III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Depleted Uranium Hexafluoride Cylinders and Maintenance (Cont'd)			(2) surveillance and maintenance activities to include annual baseline cylinder inspections of 25 percent of the inventory, periodic risk-based inspections, and valve monitoring; and (3) technical assessments to include corrosion characterization and monitoring. In 1994, the Department approved a negotiating strategy to resolve the NOV that commits the DOE to State and public involvement in current cylinder management and in the selection of a long term management strategy under the National Environmental Policy Act. As part of the accelerated cylinder program, activities in FY 1996 include complete restacking of approximately 5,000 cylinders at the sites. For the long-term depleted uranium hexafluoride management strategy selection, complete draft environmental impact statement and conduct public hearings on the draft EIS. Complete the engineering activities for the EIS alternatives and initiate a major costing study in support of the record of decision.
	$ 0	$ 0	$ 17,315
Declassification of Documents, Materials, and Systems	Funding is provided in the Pre-existing Liabilities account.	Funding is provided in the Pre-existing Liabilities account.	Costs associated with declassifying documents, materials, and systems related to Departmental missions.
	$ 0	$ 0	$ 412

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III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Corrective Actions	The Energy Policy Act of 1992 holds the Department responsible for all liabilities attributable to the operation of the uranium enrichment enterprise before the July 1, 1993, transfer to USEC. This includes environmental corrective actions at the sites. Corrective action activities at Portsmouth to meet National Pollutant Discharge Elimination System (NPDES) requirements include the dredging of another holding pond, restoration of a pond bank, and initial design work on dike construction around the railcar and tank truck loading facilities. In addition, Resource Conservation and Recovery Act of 1976 (RCRA) closure activities include completing closure for two tanks and the storage yard; and continue closure activities for the above ground storage tanks. At Paducah, corrective actions activities include expanding the biological monitoring program to support studies required by the Kentucky Pollutant Discharge Elimination System (KPDES). Studies include a temperature study, a pH study, and a bioavailability study. Funding to provide for the continuation of the program in FY 1994 is included in the proposed FY 1993 reprogramming request. Pending approval of this request, $18,100,000 has been released for critical activities.	Same as FY 1994 level. In FY 1995, 70 percent of the corrective actions identified in FY 1993 are planned to be completed. The biological monitoring program studies will continue in FY 1995 at Paducah. Presence of PCBs in a KPDES outfall in 1994 will require additional field studies, data evaluations, and probable corrective actions for compliance with State water regulations. In addition, asbestos removal from approximately 2,200 nickel ingots will be initiated at Paducah with the transfer of the ingots from the scrap yard to the new enclosure where the asbestos can be removed prior to the return of the cleaned ingots to the scrap yard. Portsmouth corrective actions will include the re-routing of drains to allow treatment of process building wastewater. These improvements will minimize the number of exceedances of the current NPDES permit. Due to the pending expiration of the NPDES permit in July 1994, additional water treatment projects are anticipated to assure compliance with more stringent effluent release criteria expected in the new permit. In addition, funding provides for the continued RCRA closure activities for the above ground storage tanks and for the sorting of waste in storage containers at the 744Y yard. The remaining 30 percent of identified corrective actions are planned to be completed in FY 1996.	The decrease is due to the completion of remaining corrective actions identified in FY 1993. Ongoing activity includes the biological monitoring program studies at Paducah. New corrective actions may be identified during FY 1995 that will require funding post-FY 1996.
	$ 18,100	$ 12,000	$ 1,000

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III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Management Services	Provides funding for support services contractors providing assistance with environmental, safety and health oversight and other activities associated with non-leased facilities, studies related to utilization of HEU stockpile, specialized technical support, administrative services, computer support, and managerial and financial audits.	Same activity as FY 1994.	Same activity as FY 1994.
	$ 3,932	$ 3,729	$ 3,720
Program Direction			
Salary	Provides salaries for the full time equivalents for continued management support of the uranium programs organization. This also includes funding for lump-sum annual leave payments to retirees, merit pay, other awards, and overtime.	Provides salaries for the full time equivalents for continued management support of the uranium programs organization. This also includes funding for lump-sum annual leave payments to retirees, merit pay, other awards, and overtime. As part of the FY 1993 reprogramming request that has been proposed, an additional $1,565,000 has been set aside for this activity.	Provides salaries for the full time equivalents for continued management support of the uranium programs organization. This also includes funding for lump-sum annual leave payments to retirees, merit pay, other awards, and overtime.
	$ 2,882	$ 2,404	$ 3,770
Benefits	Provides payments to the Civil Service Health Benefits Fund, CSC Employees Life Insurance Fund, Employees Compensation Fund, and DOE's share of social security taxes. Also includes reimbursement for subsistence and temporary quarters expenses, real estate costs, and miscellaneous moving expenses.	Provides benefits for full time equivalents. As part of the FY 1993 reprogramming request that has been proposed, an additional $349,000 has been set aside for this activity.	Provides benefits for full time equivalents.
	$ 565	$ 536	$ 867

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III. Uranium Programs (Cont'd):
Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Contractual Services	Provides funds for the purchase of supplies and materials, standard level user charges, communication, rents, utilities, printing, reproduction, and all other contractual services. $ 0	Same activity as FY 1994. Provides additional funds for uranium revitalization related reporting requirements. As part of the FY 1993 reprogramming request that has been proposed, an additional $217,000 has been set aside for this activity. $ 334	Same activity as FY 1994. $ 540
Travel	Provides funds for travel and transportation expenses. $ 153	Provides funds for travel and transportation expenses. As part of the FY 1993 reprogramming request that has been proposed, $212,000 has been set aside for this activity. The increase is associated with travel related to transparency measures. $ 326	Provides funds for travel and transportation expenses. The increase is associated with travel related to transparency measures. $ 668
Subtotal, Program Direction	$ 3,600	$ 3,600	$ 5,845
Uranium Programs - Capital Equipment	Provides funds for the purchase of various items of capital equipment required for uranium programs and laboratory equipment for technology partnerships activities. $ 100	Same activities as FY 1994. Provides additional funds for the purchase of laboratory equipment for technology partnerships activities. $ 1,000	Same activities as FY 1994. Provides additional funds for the purchase of laboratory equipment for technology partnerships activities. $ 2,100

III. Uranium Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Uranium Programs - Construction	Provides for the refurbishment of an existing cylinder storage yard, required safeguards and security upgrades, and various new construction additions and alterations from prior year balances. An FY 1993 reprogramming has been proposed to provide new storage yards for UF6 cylinder storage and environmental, safety and health corrective actions at Portsmouth, Ohio. Pending approval of this request, $814,000 has been released for critical activities.	Provides for the ongoing refurbishment of an existing cylinder storage yard, completion of required safeguards and security upgrades, and various new construction additions and alterations. An FY 1993 reprogramming has been proposed to provide for cylinder handling equipment to restack UF6 cylinders, part of the funding for new storage yards for UF6 cylinder storage, and to provide funding for outstanding vendor claims for past work performed on the utilities upgrading project. Pending approval of this request, $5,250,000 has been released for critical activities.	Provides for a cylinder refurbishment facility at the Paducah gaseous diffusion plant and completion of the refurbishment of an existing cylinder storage yard.
	$ 814	$ 9,352	$ 9,200
Uranium Programs	$ 321,211	$ 89,345	$ 102,898

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes made from FY 1995 Budget Amendment are denoted with a vertical line in left margin.)

OFFICE OF URANIUM PROGRAMS
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Project Summary Listing

Uranium Programs

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
96-U-200	UF6 Cylinder Refurbishment Facility, Paducah, KY, Gaseous Diffusion Plant	$ 0	$ 0	$ 0	$ 5,800	$ 3,600	$ 9,400
93-U-200	UF6 Cylinders and Storage Yards, Paducah, KY and Portsmouth, OH, Gaseous Diffusion Plants	2,248	0	3,852	3,400	0	9,500
91-U-206	Reduction of PCB Contamination, Paducah, KY, and Portsmouth, OH, Gaseous Diffusion Plants	46,000	0	-4,000	0	0	42,000
91-U-207	Roof Upgrading, Portsmouth, OH, Gaseous Diffusion Plant	7,753	0	-950	0	0	6,803
91-U-208	Safeguards and Security Upgrading, Portsmouth, OH, Gaseous Diffusion Plant	11,000	0	700	0	0	11,700
89-U-501	UF6 Cylinders and Storage Yards, Paducah, KY and Portsmouth, OH, Gaseous Diffusion Plants	22,886	0	4,300	0	0	27,186
87-N-502	Cooling Tower Upgrading, Paducah, KY, Gaseous Diffusion Plant	4,621	0	-1,152	0	0	3,469
84-N-405	Utilities Upgrading, Phase III, Paducah, KY, and Portsmouth, OH, Gaseous Diffusion Plants	26,705	0	250	0	1,666	28,621
GP-N-501	General Plant Projects, Various Locations	3,834	0	250	0	0	4,084
TOTAL Uranium Programs		$ 125,047	$ 0	$ 3,250	$ 9,200	$ 5,266	
TOTAL NUMBER OF LINE ITEMS		(8)	(0)	(8)	(2)	(2)	

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-U-200 UF6 Cylinder Refurbishment Facility, Paducah Kentucky, Gaseous Diffusion Plant — TEC: $ 9,400 TPC: $10,100

Start Date: 1st Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 5,800	$ 0	$ 5,800	$ 2,700
1997	3,600	0	3,600	6,700

3. Narrative:

This project will provide facilities necessary to refurbish UF6 cylinders. Refurbishment of Department of Energy cylinders for long-term storage includes surface preparation and coating application. A facility to complete this activity will require a cylinder staging area and an inspection area in addition to the surface preparation and coating application areas. This project consists of a new building of approximately 16,000 square feet and a new staging area to support facility operations.

The facility will have the capacity to process approximately 2,000 cylinders annually. The annual capacity will be expandable to accommodate an increase in cylinders needing refurbishment if a greater capacity is warranted in the future.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-U-200 UF6 Cylinders and Storage Yards, Paducah, Kentucky and Portsmouth, Ohio, Gaseous Diffusion Plants — TEC: $ 9,500 TPC: $ 9,750

Start Date: 1st Qtr. FY 1993 Completion Date: 4th Qtr. FY 1996

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 5,863	$ (3,615) 1/	$ 2,248	$ 48
1994	0	0	0	0
1995	2,452	1,400 2/	3,852	2,250
1996	3,400	0	3,400	7,202

1/ Unexpended balance of $3,615,000 transferred from the Department of Energy (DOE) to the United States Enrichment Corporation (USEC) as part of the Determination Order. Funding in the amount of $1,400,000 did not transfer to USEC, but was requested as part of the FY 1993 reprogramming to complete the remaining DOE scope of this project.
2/ Funding requested as part of the FY 1995 budget amendment.

3. Narrative:

This project will provide new storage cylinders for the gaseous diffusion plants necessary for handling and storage of uranium hexafluoride (UF6). Approximately 9,600 cylinders will be procured. Cylinder storage yards with adequate lighting and cylinder saddles will be constructed at each site for UF6 tails storage. New mobile cylinder handling equipment will also be purchased.

In carrying out the provisions of the Energy Policy Act of 1992, Public Law, 102-486, a portion of the scope of this project transferred to USEC effective July 1, 1993. Prior to July 1, 1993, DOE completed Title I design for the X-745G storage yard at Portsmouth. Remaining DOE scope consists of relocating the existing cylinders, refurbishing the existing G yard with a concrete pad to provide adequate storage for the existing cylinders, procuring cylinder handling equipment to expedite the relocation and restacking of existing cylinders, and procuring concrete saddles to replace the wooden saddles.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Uranium Programs Offsetting Collections

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Uranium Programs Offsetting Collections					
Operating Expenses	$ -70,000	$ 0	$ 0	$ 0	$ -34,903
TOTAL	$ -70,000 a/	$ 0	$ 0	$ 0	$ -34,903
Summary					
Operating Expenses	$ -70,000	$ 0	$ 0	$ 0	$ -34,903
Total Program	$ -70,000	$ 0	$ 0	$ 0	$ -34,903
Staffing (FTEs)	0	0	0	0	0

a/ An additional $9,198,199.20 was collected and is recorded under proprietary receipts.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Uranium Programs Offsetting Collections

FY 1995 Appropriation	$ 0
FY 1995 Comparable	$ 0
Uranium Programs Offsetting Collections	
The increase of $-34,903,000 in offsetting collections is associated with sales of low enriched uranium	-34,903
FY 1996 Congressional Budget Request	$ -34,903

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES
(dollars in thousands)

KEY ACTIVITY SUMMARY

URANIUM PROGRAMS OFFSETTING COLLECTIONS

I. Preface: Uranium Programs Offsetting Collections

The Energy Policy Act of 1992 transferred certain uranium enrichment functions to the United States Enrichment Corporation, including the marketing and sale of enriched uranium and uranium enrichment and related services. Also, under the Energy Policy Act, "all contracts, agreements, and leases with the Department, including all uranium enrichment contracts and power purchase contracts, that have been executed by the Department before the transition date and that relate to uranium enrichment and related services shall transfer to the Corporation."

However, the Energy Policy Act also states that contracts "for research and development or other nonpower applications shall remain with the Department."

During FY 1994, the Department received low enriched uranium (LEU) as the result of an intergovernmental agreement. The Department also collected $9,198,199.20 that is recorded under proprietary receipts. The Department expects to receive additional LEU in FY 1995.

In addition, FY 1994 activities reflect the collection of revenues from the Naval Reactors Development program to offset costs for activities related to shutdown of highly enriched uranium equipment and inventory disposition. In FY 1995, funding for these activities will only be included in the Naval Reactors Development budget within the Materials Support and Other Defense Programs appropriation account. These activities will continue to be managed by Uranium Programs but funding was not requested in this appropriation account and no collections will be recorded.

In FY 1996, the budget assumes the sale of LEU received by the Department after July 1, 1993 with a market value of $34,903,000.

II. A. Summary Table: Uranium Programs Offsetting Collections

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Government	$ -70,000	$ 0	$ 0	$ 0
Contract Sales	0	0	-34,903	-34,903
Total, Uranium Programs Offsetting Collections	$ -70,000	$ 0	$ -34,903	$ -34,903

II. B. Laboratory and Facility Funding Table: Uranium Programs Offsetting Collections

All Other	$ -70,000	$ 0	$ -34,903	$ -34,903
Total, Uranium Programs Offsetting	$ -70,000	$ 0	$ -34,903	$ -34,903

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Uranium Programs Offsetting Collections			
Government	Collections from the Naval Reactors Development program to offset government costs for highly enriched uranium equipment shutdown and inventory disposition.	No activity.	No activity.
	-$ 70,000	$ 0	$ 0
Contract Sales	No activity.	No activity.	Collections of $34,903,000 from the sale of low enriched uranium received by the Department subsequent to July 1, 1993. The Department is negotiating a sales and marketing agreement with the United States Enrichment Corporation to market this material for the Department.
	$ 0	$ 0	-$ 34,903
Uranium Programs Offsetting Collections	-$ 70,000	$ 0	-$ 34,903

Isotope Production and Distribution

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Isotope Production and Distribution Fund					
Isotope Production	4.9	4.9	—	—	—
Total, Isotope Production and Distribution Fund	4.9	4.9	—	—	—

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ISOTOPE PRODUCTION AND DISTRIBUTION FUND

OVERVIEW

ISOTOPE PRODUCTION AND DISTRIBUTION FUND

The Department, through the Isotope Production and Distribution (IP&D) program, provides radioactive and stable isotope products and associated services to a wide and varied domestic and international market. These materials and services are produced, processed and provided through the utilization of DOE facilities and scientific capabilities, which exist to satisfy other DOE research and production missions. Ultimate applications of isotope products include medical research and health care, industrial research and manufacturing, agriculture, food preservation, education, and national defense.

The IP&D program operates under a revolving fund account and maintains financial continuity through its revenues and through payments from the isotope support decision unit. The isotope program has two primary missions. The first mission is to produce and distribute certain radioisotopes and enriched stable isotopes for research or development, medical diagnoses and therapy, and other applications in the national interest. Charges for these isotopes are to provide reasonable compensation to the Department, while encouraging research, development, and applications of such isotopes. The second mission is to continue to produce and distribute other radioisotopes and enriched stable isotopes for medical, industrial, agricultural, and other useful applications on a businesslike basis. Prices for these products are established based on a number of factors, which include production costs and market value. The Department will endeavor to look at opportunities for the private sector to co-fund or invest in new ventures. Also, the Department will seek to divest from ventures that can be operated profitably by the private sector. These missions also implement the National Isotope Strategy published by the Department in August 1994.

The program provides for three major categories of isotope products: Radioisotopes, Electromagnetically Enriched (EM) Stable Isotopes, and Non-EM Enriched Stable Isotopes. Radioisotopes include radioactive materials produced in DOE reactors and accelerators and as byproduct materials. The radioisotopes offered vary widely in half-life, physical and chemical form, and production batch size. EM stable isotopes are separated in the Electromagnetic Isotope Enrichment Facility (Calutrons) at Oak Ridge National Laboratory (ORNL), Tennessee (TN). Radioisotopes are produced or originate from a variety of DOE sites including the Idaho National Engineering Laboratory, Los Alamos National Laboratory (LANL), Brookhaven National Laboratory, Hanford, and ORNL. Non-EM enriched stable isotopes are routinely produced at Mound Plant, Ohio. Isotope products and services are sold by the DOE site which produces and/or supplies the product or service.

The enriched stable isotopes and some of the radioisotopes are amenable to production, storage, and distribution from inventories, but certain radioactive isotopes must be produced frequently or on demand because of their rapid decay. Usually, each order must be packaged individually.

Isotope related services that are provided may be associated with the products sold or may involve the preparation of specialized physical forms. Such items may include, but are not limited to, irradiations services, target preparation and processing, source encapsulation and other special preparations, analysis and separations, services related to shipping, and processing of returned isotopes. These items are user specific and made to individual specifications. The range of services which can be provided depends on status of facilities and equipment.

The total program expenses for FY 1996 are $34.9 million, consisting of $12.0 million for producing and processing of Molybdenum-99 (Mo-99) and $22.9 million, which includes $9.5 million in offsetting revenues, to maintain continuity of the program, and for necessary expenses attributable to production, processing, and distribution of isotopes. This will permit the maintenance of an indigenous United States source of isotopes essential for health care, research, and other nationally needed products. The FY 1996 budget request is $25.4 million.

Output Measures:

- Given a positive result of the Environmental Assessment, first production of Mo-99 by April 1996

- Submit 5 to 10 development proposals for inclusion in the 1997 budget

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Overview - ISOTOPE PRODUCTION AND DISTRIBUTION FUND (Cont'd)

- Three program/stakeholder meetings and visits to 10 major customers performed annually
- Establish 5 joint ventures with private organizations by October 1996
- Achieve Gross Profit of 10%
- Achieve 95% on time deliveries
- Decrease consumer complaints by 20%
- Increase revenue by 5%
- Continue to provide needed isotopes to meet market demand

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ISOTOPE PRODUCTION AND DISTRIBUTION FUND
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Isotope Production and Distribution Fund

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1996 Request
Isotope Production & Distribution Fund	$ 16,367	$ 28,993	$ 34,858
Revenues from sales	(10,472)	(9,500)	(9,500)
Federal support	-	(19,493)	(25,358)
Borrowing authority	(985)	0	0
Net Request	$ 4,910	$ 0	$ 0
Staffing (FTE's)	6	0	0

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#1738.03

DEPARTMENT OF ENERGY
FY 1996 OMB BUDGET REQUEST
ISOTOPE PRODUCTION AND DISTRIBUTION FUND
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Isotopes Production and Distribution Fund

FY 1995 Appropriation	$ 7,300
- Amendment	$ 0
FY 1996 Comparable	$ 0
Isotope Production and Distribution Fund	
- Maintain financial continuity through revenues and through payments from the Isotope Support decision unit	$ 0
FY 1996 OMB Budget Request	$ 0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ISOTOPE PRODUCTION AND DISTRIBUTION FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

ISOTOPE PRODUCTION AND DISTRIBUTION FUND

I. Preface: Isotope Production and Distribution Fund

The Department, through the Isotope Production and Distribution (IP&D) program, provides radioactive and stable isotope products and associated services to a wide and varied domestic and international market. These materials and services are produced, processed and provided through the utilization of DOE facilities and scientific capabilities, which exist to satisfy other DOE research and production missions. Ultimate applications of isotope products include medical research and health care, industrial research and manufacturing, agriculture, food preservation, education, and national defense.

The IP&D program operates under a revolving fund account and maintains financial continuity through its revenues and through payments from the isotope support decision unit. The isotope program has two primary missions. The first mission is to produce and distribute certain radioisotopes and enriched stable isotopes for research or development purposes and medical diagnoses and therapy, that may or may not be profitable but are needed in meeting the national priority for fulfilling U.S. research needs and supporting health care system. Charges for these isotopes are to provide reasonable compensation to the Department, while encouraging research and development of such isotopes. The second mission is to continue to produce and distribute other radioisotopes and enriched stable isotopes for medical, industrial, agricultural, and other useful applications on a businesslike basis. Prices for these products are established based on a number of factors, which include production costs and market value. The Department will endeavor to look at opportunities for the private sector to co-fund or invest in new ventures. Also, the Department will seek to divest from ventures that can be operated profitably by the private sector.

II. A. Summary Table: Isotope Production and Distribution Fund

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Isotope Production	$ 4,910	$ 0	$ 0	$ 0
New Product Initiatives / Production Reactor	0	0	0	0
Total, Isotope Production and Distribution Fund	$ 4,910	$ 0	$ 0	$ 0

II. B. Laboratory and Facility Funding Table: Isotope Production and Distribution Fund

All Other	$ 4,910	$ 0	$ 0	$ 0
Total, Isotope Production and Distribution Fund	$ 4,910	$ 0	$ 0	$ 0

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Isotope Production and Distribution Fund			
Isotope Production	Replenished working capital used for startup expenditures on additional products in demand and maintained continuity of isotope production, processing, and distribution to customers. This included a revenue offset of $10.5 million in FY 1994.	Financial viability is maintained through revenues and from payments from the Isotope Support decision unit to maintain continuity of isotope production, processing and distribution to customers and supports production and sale of a variety of radioactive and stable isotope products and associated services. This assumes a projected revenue offset of $9.5 million in FY 1995.	Financial viability is maintained through revenues and from payments from the Isotope Support decision unit to maintain continuity of isotope production, processing and distribution to customers and supports production and sale of a variety of radioactive and stable isotope products and associated services. This assumes a projected revenue offset of $9.5 million in FY 1996.
	$ 4,910	$ 0	$ 0
New Product Initiatives / Production Reactor	This initiative was delayed because of funding constraints and reactor uncertainty.	Activity is described under the Isotope Support decision unit.	Activity is described under the Isotope Support decision unit.
	$ 0	$ 0	$ 0
Isotope Production and Distribution Fund	$ 4,910	$ 0	$ 0

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Nuclear Waste Disposal Fund

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Nuclear Waste Disposal Fund					
Discretionary Funding	260.0	260.0	392.8	392.8	—
Mandatory Funding (non-add)	—	—	—	—	(431.6)
Total, Nuclear Waste Disposal Fund	260.0	260.0	392.8	392.8	—

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Proposed Appropriation Language

Nuclear Waste Disposal Fund

[For the nuclear waste disposal activities to carry out the purposes of Public Law 97-425, as amended, including the acquisition of real property or facility construction or expansion, $392,800,000, to remain available until expended, to be derived from the Nuclear Waste Fund. To the extent that balances in the fund are not sufficient to cover amounts available for obligation in the account, the Secretary shall exercise her authority pursuant to section 302(e)(5) of said Act to issue obligations to the Secretary of the Treasury: *Provided*, That of the amount herein appropriated, within available funds, not to exceed $5,500,000 may be provided to the State of Nevada, for the sole purpose of conduct of its scientific oversight responsibilities pursuant to the Nuclear Waste Policy Act of 1982, Public Law 97-425, as amended: *Provided further*, That of the amount herein appropriated, not more than $7,000,000 may be provided to affected local governments, as defined in the Act, to conduct appropriate activities pursuant to the Act: *Provided further*, That the distribution of the funds herein provided amoung the affected units of local government shall be determined by the Department of Energy and made available to the State and affected units of local government by direct payment: *Provided further*, That within ninety days of the completion of each Federal fiscal year, each State or local entity shall provide certification to the Department of Energy, that all funds expended from such payments have been expended for activities as defined in Public Law 97-425, as amended. Failure to provide such certification shall cause such entity to be prohibited from any further funding provided for similar activities: *Provided further*, That none of the funds herein appropriated may be used directly or indirectly to influence legislative action on any matter pending before Congress or a State legislature or for any lobbying activity as provided in section 1913 of title 18, United States Code: *Provided further*, That none of the funds herein appropriated may be used for litigation expenses: *Provided further*, That none of the funds herein appropriated may be used to support multistate efforts or other coalition building activities inconsistent with the restrictions contained in this Act.]

EXPLANATION OF CHANGE

Beginning in FY 1996, under the provisions included in the Department of Energy's proposed legislation to establish mandatory funding for the Program, funds shall remain available until expended, without further appropriation but within any specific directives and limitations included in appropriation Acts. Funding for scientific oversight activities to be conducted by the State of Nevada and affected local governments, pursuant to the Nuclear Waste Policy Act of 1982, (P.L. 97-425), as amended, will be included in the budget request for the Defense Nuclear Waste Disposal appropriation.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE DISPOSAL ACTIVITIES

OVERVIEW

NUCLEAR WASTE ACTIVITIES

The mission of the Office of Civilian Radioactive Waste Management (OCRWM) is to manage and dispose of the Nation's spent nuclear fuel and high-level radioactive waste. The Office provides leadership in developing and implementing strategies that assure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

The Office was established by the Nuclear Waste Policy Act (NWPA) of 1982, as amended, to dispose of spent nuclear fuel and high-level nuclear waste from commercial and defense activities in a permanent geologic repository. The Nuclear Waste Policy Amendments Act (NWPAA) of 1987 designated the Yucca Mountain, Nevada, site for detailed scientific investigation to evaluate the site's suitability for a geologic repository. The NWPAA also authorized the siting, construction, and operation of a Monitored Retrievable Storage (MRS) facility, subject to certain conditions.

OCRWM's total FY 1996 Congressional budget request is $630.0 million, which includes $431.6 million from mandatory funding and $198.4 million from the Defense Nuclear Waste Disposal appropriation. This level of funding is required to carry out a redirected Civilian Radioactive Waste Management Program.

The increased funding levels have provided OCRWM with a basis to redirect our program. We have a more clearly articulated mission, a new vision, and a clearly defined set of goals and strategies. Most importantly, we have a renewed sense of direction with which to establish our goals. OCRWM has set a course far beyond a "business-as-usual" approach. Key components of our program are:

o A focus on early site suitability evaluation of Yucca Mountain by realigning our site characterization activities and supporting those activities with increased funding and staff;

o Addressing the realities of near-term management of spent fuel by resolving the waste acceptance issue and defining the Department's role for near-term storage; and

o Developing a Multi-Purpose Canister system that is integrated into all program elements.

The new Program Approach requires no changes to the Nuclear Waste Policy Act of 1982, as amended, but does anticipate a new Environmental Protection Agency standard for a repository at Yucca Mountain, and conforming changes to the Nuclear Regulatory Commission, 10 CFR Part 60, as required by the Energy Policy Act of 1992. Revisions to the standard contract for spent fuel acceptance, 10 CFR Part 961, may also be required.

This Program Approach would result in the following key milestones for the Yucca Mountain Site Characterization Project:

1998: technical site suitability evaluation

If the site is found suitable:

2000: Site Recommendation Report to the President (accompanied by an Environmental Impact Statement)

2001: License Application to the Nuclear Regulatory Commission

2010: Start of repository operations

The FY 1996 Congressional budget request has been refocused to describe the Program Approach and a new product-oriented structure. To support the Program's out-year funding requirements, a multi-year Program Plan has also been prepared to accompany the budget request. The Program Plan describes future activities and funding levels for the major elements of the Office of Civilian Radioactive Waste Management Program - characterization of the Yucca Mountain site to determine whether it is suitable for hosting a geologic repository, activities to accept, transport, and store nuclear waste prior to disposal, and activities that provide management support and regulatory compliance. The Program Plan also includes criteria or indicators against which program performance can be measured for all the major program elements.

Within the existing budget structure, the budget text will now be written to reflect the program's major products, which are described below:

Yucca Mountain Site Characterization Project:

Product	Description
Site Suitability	Includes activities required to support the technical site suitability evaluation scheduled for 1998, and if the site is found suitable, to prepare a site recommendation report by the end of FY 2000.
National Environmental Policy Act Process	Includes activities required to collect, interpret, and analyze data required for the preparation of the Draft and Final Environmental Impact Statement in FY 1998 and FY 2000 and the review of these documents.
Repository Licensing	Includes activities required to ensure that required information will be available to develop a License Application for submission to the Nuclear Regulatory Commission in FY 2001, if the site is suitable.
Management and Compliance	Includes normal management activities required for direction and control of the Yucca Mountain Project with special allocations required to support external agencies and the public in their review and interactions with the project.

Waste Acceptance, Storage, and Transportation: (Includes Monitored Retrievable Storage, Transportation System, and Waste Acceptance budget elements)

Product	Description
Waste Acceptance	Includes activities required for acceptance of spent nuclear fuel and high-level nuclear waste into the Federal waste management system.
Transportation	Includes activities required for development of the transportation system to transport waste from reactors to a temporary storage facility or final disposal.
MPC Subsystem	Includes activities required for development of the MPC subsystem to meet storage, transportation, and disposal requirements for spent nuclear fuel.
Project Management and Integration	Includes normal management activities and technical integration associated with the Transportation and MPC programs.

Program Support: (Includes Quality Assurance, Systems Integration and Compliance, and Program Management budget elements)

Product	Description
Direct YMSCO Support	Includes quality assurance, systems integration, regulatory compliance and other activities which directly support the Yucca Mountain Site Characterization Project.
Direct Storage and Transportation Support	Includes quality assurance, systems integration, regulatory compliance and other activities which directly support the Waste Acceptance, Transportation, and MPC efforts.
Overall Program Support	Activities related to the management and integration of the overall Civilian Radioactive Waste Management Program.
Cooperative Agreements	Cooperative agreements provided to external organizations in accordance with the Nuclear Waste Policy Act.
Federal Salaries/Benefits	Federal employee salaries and benefits.

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We believe this new format to be an improvement over past submittals in that it provides a description of activities necessary to implement the Program Approach, a clear definition of planned progress with interim milestones and products, and a clarification of the relationships among activities, products and funding requirements.

The major thrusts of the FY 1996 Congressional Budget Request are as follows:

Yucca Mountain Site Characterization Project

The request provides $472.1 million to continue characterization of the Yucca Mountain candidate repository site, including excavation and tunneling activities related to construction of the Exploratory Studies Facility (ESF) and ongoing surface-based testing. Funding is requested to continue construction of the ESF 7.8 kilometer loop and support facilities. Underground testing in the ESF will continue. The testing and design program will focus on activities that are necessary to support DOE decisions on site suitability, site recommendation, and submittal of the License Application. These activities will be conducted in parallel with repository and waste package Advanced Conceptual Design (ACD) efforts, and associated performance assessments. Other planned work includes regulatory, institutional, quality assurance, environment, safety and health, information management, systems engineering and project management activities. Other activities include: institutional interactions with the State of Nevada and affected local governments; financial assistance for investigation, mitigation, and oversight by the State of Nevada; implementation of the Benefits Agreements program as required; extensive interactions with the Nuclear Regulatory Commission (NRC) and the Presidentially-appointed Nuclear Waste Technical Review Board (NWTRB; payments-equal-to-taxes to appropriate and affected units of local government; and project management activities. This program supports the following key milestones for the Yucca Mountain Site Characterization Project: Technical Site Suitability evaluation in 1998; and if the site is found suitable, recommendation to the President in 2000; and License Application to the Nuclear Regulatory Commission in 2001.

Waste Acceptance, Storage and Transportation

This program area includes the Monitored Retrievable Storage (MRS), Transportation and Waste Acceptance budget elements. Funding of $27.4 million supports the continuing development of the Multi-Purpose Canister system, including the design and certification through the Nuclear Regulatory Commission (NRC). The MPC will meet the requirements for storage, transportation and eventually disposal, using overpacks suitable for each function. The Transportation System request of $26.6 million provides for the basic design of a Transportation system, including the design and certification of Legal-Weight Truck (LWT) and Multi-Purpose Canister (MPC) transportation cask systems to be achieved by 1998. Funding of $7.6 million is requested for Waste Acceptance activities including, managing the Standard Disposal Contract, establishing and verifying fees paid into the Nuclear Waste Fund, and developing the Nuclear Waste Fund fee adequacy analysis.

Program Support

This program area includes the Quality Assurance, Systems Integration and Compliance and the Program Management budget elements. The request provides $14.5 million to maintain the quality assurance program, $13.0 million for systems integration and regulatory compliance activities, and $68.8 million for program management, which includes Federal salaries, benefits, and travel; strategic planning; international program support; external relations; program control and administration; and information management.

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FISCAL YEAR 1996 OUTPUT MEASURES:

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT:

o Site Suitability Product

- Higher Level Findings:
  Issue the Preclosure Rock Characteristics Higher Level Finding

- Scientific Programs:
  Complete the Human Intrusion/Postclosure Rock Characteristics & Geochemistry Technical Basis Report
  Complete the Preliminary Integrated Geologic / Hydrologic / Geochemistry Model
  Complete the Preclosure Rock Characteristics Technical Basis Report
  Complete the Tectonics Technical Basis Report
  Complete the Potential Effects of Postclosure Climate Report

- Performance Assessment:
  Issue the Total System Performance Assessment 1995

- Construction / Testing:
  Complete excavation of north ramp / start main Topopah Spring level excavation
  Complete excavation of first Ghost Dance fault exploratory drift
  Complete excavation of second Ghost Dance fault exploratory drift

o Licensing Product

- Licensing
  Annotated Outline / Topical Reports:
  Complete Revision 1 of the License Application Annotated Outline:
  Complete the Ground-water Travel Time Topical Report:
  Complete the Third Seismic Hazard Methodology Topical Report:
  Complete the Initial Burnup Credit / Long Term Criticality Topical Report:

- Scientific Programs:
  Provide seismic design input to the repository Advanced Conceptual Design

- Performance Assessment:
  Complete the 1996 Performance Assessment Recommendation to the Site Characterization / Testing Programs

o National Environmental Policy Act (NEPA) Product

- Complete the Environmental Impact Statement (EIS) Implementation Plan:

WASTE ACCEPTANCE, STORAGE AND TRANSPORTATION:

o MPC Product:

- Complete MPC designs for large and small MPC's and submit Safety Analysis Report (SAR) to Nuclear Regulatory Commission.

- Perform topical SAR design of MPC storage mode and submit to NRC for Part 72 review.

- Support DOE/industry development of a spent fuel dry transfer system.

- Begin Fabrication of full-size MPC Prototype.

FISCAL YEAR 1996 OUTPUT MEASURES (Cont.):

o Transportation Product:

- Complete MPC cask systems designs for large and small MPC Transportation Casks, and submit SAR's to NRC.
- Initiate procurement activities for both large and small prototype MPC transportation casks.
- Complete certification interactions with NRC and receive Certificates of Compliance for GA-4/9 LWT Cask.

o Waste Acceptance Product:

- Complete, issue and implement Final Rule modifying the Standard Disposal Contracts to address an MPC-based Civilian Radioactive Waste Management System "CRWMS."
- Complete final spent nuclear fuel (SNF) verification plan.
- Verify ongoing and one-time fee paid into NWF.
- Conduct technical interface with nuclear utilities to ensure waste acceptance capability.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)
LEAD TABLE
Nuclear Waste Activities Funding

ACTIVITY	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	FY 1997 Request	FY 1998 Request
Yucca Mountain Site Characterization Project					
Operating Expenses	$ 248,655	$ 354,780	$ 454,811	$ 513,444	$ 526,808
Capital Equipment	10,854	20,490	17,290	19,700	4,300
Subtotal, Yucca Mountain Site Characterization Project	$ 259,509	$ 375,270	$ 472,101	$ 533,144	$ 531,108
Monitored Retrievable Storage					
Operating Expenses	$ 14,541	$ 27,400	$ 27,400	$ 42,900	$ 102,042 *
Transportation System					
Operating Expenses	$ 14,209	$ 23,600	$ 26,600	$ 16,375	$ 17,450
Waste Acceptance					
Operating Expenses	$ 3,116	$ 6,000	$ 7,600	$ 10,000	$ 14,000
Quality Assurance					
Operating Expenses	$ 13,243	$ 14,137	$ 14,528	$ 14,984	$ 15,448
Systems Integration and Compliance					
Operating Expenses	$ 12,117	$ 12,663	$ 13,013	$ 13,421	$ 13,837
Program Management					
Operating Expenses	$ 62,765	$ 62,960	$ 68,458	$ 75,137	$ 77,257
Capital Equipment	500	200	300	200	200
Subtotal, Program Management	$ 63,265	$ 63,160	$ 68,758	$ 75,337	$ 77,457
Total Program	$ 380,000	$ 522,230	$ 630,000	$ 706,161	$ 771,342
FUNDING:					
Nuclear Waste Fund Appropriation	$ 260,000	$ 392,800	$ 0	$ 0	$ 0
Defense Nuclear Waste Disposal Approp.	120,000	129,430	198,400	166,161	167,342
Subtotal, Discretionary Funding	$ 380,000	$ 522,230	$ 198,400	$ 166,161	$ 167,342
Mandatory Funding	- -	- -	431,600	540,000	604,000
TOTAL PROGRAM	$ 380,000	$ 522,230	$ 630,000	$ 706,161	$ 771,342
Staffing (FTE's)	251	245	270	303	321

Authorizations: P.L. 97-425, "Nuclear Waste Policy Act" (1982); P.L. 100-203, "Nuclear Waste Policy Amendments Act" (1987)

* Contingency funding of $47.1M is included for interim storage activities, which assumes passage of a legislative proposal.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

PROJECTED RECEIPTS AND FUNDING BY FISCAL YEAR

(Dollars in Thousands)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
NWF Receipts:							
One mill/kWh Fee 1/.....	584,439	585,400	590,800	600,100	606,300	607,200	616,200
Fee Credits 2/.....	(189,513)	(30,000)	--	--	--	--	--
One-time Fee.....	4,500	0	0	0	0	0	0
Subtotal.....	399,426	555,400	590,800	600,100	606,300	607,200	616,200
Investment 3/.....	187,730	288,000	321,000	348,000	368,000	385,000	412,000
Subtotal.....	587,156	843,400	911,800	948,100	974,300	992,200	1,028,200
Less: Unrealized Discount....	(3,010)	--	--	--	--	--	--
Total Income.....	584,146	843,400	911,800	948,100	974,300	992,200	1,028,200
Program Funding:							
Nuclear Waste Fund Approp.	260,000	392,800	0	0	0	0	0
Defense Nuclear Waste Approp.	120,000	129,430	198,400	166,161 4/	167,342	167,946	166,206
Subtotal, Discretionary	380,000	522,230	198,400	166,161	167,342	167,946	166,206
Mandatory Funding	--	--	431,600	540,000	604,000 5/	668,000 5/	512,000
Total Program	380,000	522,230	630,000	706,161	771,342	835,946	678,206

1/ Based on Sept 7, 1994, EIA forecast memo to OCRWM.
2/ Result of Consolidated Edison v. DOE, decided March 17, 1989.
3/ Represents net earnings on investments available for appropriation.
4/ Reflects reduction of $12.7 million from Reinventing Government proposal.
5/ Includes contingency funding of $47.1M in FY 1998 and $107.5M in FY 1999 for interim storage activities, which assumes passage of a legislative proposal.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE ACTIVITIES
(dollars in thousands)

SUMMARY OF CHANGES

FY 1995 Nuclear Waste Fund Appropriation	$392,800
FY 1995 Defense Nuclear Waste Disposal Appropriation	129,430
FY 1995 Comparable	$522,230

CHANGES FROM FY 1995 TO FY 1996

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Increase reflects OCRWM plans to conduct the following major activities at the Yucca Mountain candidate site:

Systems Engineering: Systems Engineering will provide an analysis to classify permanent and temporary ESF items and repository and Waste Package ACD items and their effects on repository design, and validation of ESF design efforts. A System Element Performance Allocation Study will be performed, as well as other studies to support increased ACD requirements development. Specialty Engineering will be performed to support ACD. Input will be provided to the program Total System Life Cycle Cost (TSLCC) effort. A Performance Confirmation Program Plan will be prepared	+ 5,931
Waste Package: The Waste Package Program reflects an increase in waste package engineering development, materials testing/modeling and waste form testing/modeling. The engineering development work includes issuance of technical requirement documents and initiation of container fabrication development. The materials work includes initiation of microbiologically-induced, radiolysis and drip condition corrosion tests. The spent fuel work includes enhancement of unsaturated condition dissolution tests	+ 3,600
Site Investigations: Testing requirements associated with the ESF, particularly those associated with hydrologic and transport evaluations and the increased field data collection effort (e.g., drilling), are responsible for most of the increased Site Investigations effort. The Site Investigations Program reflects accelerated efforts to provide technical basis reports and process-level models in support of Higher-Level Findings with respect to suitability guidelines	+ 23,418
Repository: The increased Repository Design activities reflect the requirement to complete evaluation of certain alternative design features and provide the Advanced Conceptual Design that will be utilized to evaluate higher-level findings with respect to site suitability	+ 15,600
Regulatory: The scope of Regulatory activities will increase due to: (a) preparation and review of Technical Basis Reports (TBRs) to support the site suitability evaluation (specifically, the Human Intrusion / Postclosure Rock Characteristics & Geochemistry TBR, the Preclosure Rock Characteristics TBR, Tectonics TBR, and the Potential Effects of Postclosure Climate Report); (b) data compilation and code preparation for TSPA 1997; and (c) preparation and review of the Preclosure Rock Characteristics Higher-Level Finding. A complete revision of the Annotated Outline for License Application is also planned in FY 1996	+ 3,906
Exploratory Studies Facility: The ESF Program reflects completion of the north ramp, excavation of a portion of the main drift and five test alcoves including access to the Ghost Dance fault, and continuation of test planning, coordination and construction test support	+ 2,299
Test Facilities: Facilities costs reflect the expected increase in the Nevada Test Site allocation for support and logistical services, for which the Yucca Mountain Project pays an increasing share as defense-related activities at NTS phase down	+ 14,300
Project Management: Project Management costs are essentially unchanged	+ 50

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SUMMARY OF CHANGES (continued)

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT (con't)

Financial/Technical Assistance: Financial Assistance to the State of Nevada, affected units of local government and cooperative agreements with Nevada universities will increase commensurate with increased Project scope and Secretarial initiatives for increased stakeholder involvement.	+ 6,273
Quality Assurance: Quality Assurance costs will increase as information is acquired from underground testing in the ESF, as construction progress becomes increasingly sensitive to test interference considerations, and as synthesis and modeling activities become more comprehensive in scope	+ 910
Information Management: Information Management costs will reflect substantially increased records management requirements, expenditures to improve office automation, and implementation of requirements for the Licensing Support System (LSS)	+ 10,749
Environment, Safety and Health: Activities related to the preparation of a Draft Environmental Impact Statement (DEIS) are responsible for the increased Environmental Program budget. The Safety and Health (S&H) program will expand in scope and magnitude to effectively support increased site characterization and construction activities, particularly those associated with the ESF.	+ 10,900
Institutional: Increased funding of Institutional activities will support increased public outreach and stakeholder involvement.	+ 500
Support Services: Administrative support services and training requirements will decrease due to efficiencies achieved through contractor consolidation	- 1,605

MONITORED RETRIEVABLE STORAGE

No Change.	0

TRANSPORTATION SYSTEM

Initiate prototype fabrication of both large and small MPC transportation casks.	+ 3,000

WASTE ACCEPTANCE

Complete, issue, and implement Final Rule to modify the Standard Disposal Contract to address an MPC-based CRWMS while proceeding with efforts for a second rulemaking to address remaining ACR issues. Increase in anticipated number of DCSs and DCS Exchange submittal requiring review. Complete final SNF Verification Plan and increase efforts associated with developing implementing procedures for verification. Revise MC&A Plan for MGDS based on NRC comments, and select/procure tamper-indicating devices for SNF canisters	+ 1,600

QUALITY ASSURANCE

Increase technical quality-affecting activities commensurate with expanded Yucca Mountain Site Characterization Project and MPC design efforts	+ 391

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SUMMARY OF CHANGES (continued)

SYSTEMS INTEGRATION AND COMPLIANCE

Continues support of the MPC initiative and Yucca Mountain site characterization. Activities which will increase include National Environmental Policy Act (NEPA) compliance, environment, safety & health compliance audits, implementation of new EPA high-level waste (HLW) standard, NRC coordination on licensing and mined geological disposal system (MGDS) annotated outlines, procedural agreements with NRC and affected parties, and support to MPC, Exploratory Studies Facility (ESF) and MGDS design efforts in terms of design reviews, requirements traceability, and configuration management	+ 350

PROGRAM MANAGEMENT

Increase salaries, benefits and travel to support 25 additional Federal FTEs; expand program control and administration activities commensurate with increase in Yucca Mountain Site Characterization Project activity, and increase office automation and records management activities	+ 5,598
Total FY 1996 CONGRESSIONAL BUDGET REQUEST	$630,000

FUNDING SUMMARY:

FY 1996 Defense Nuclear Waste Disposal Request	198,400
FY 1996 Mandatory Funding	431,600
Total FY 1996 CONGRESSIONAL BUDGET REQUEST	$630,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
(DOLLARS IN THOUSANDS)

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

BUDGET ELEMENT	FY 1994 APPROP.	FY 1995 APPROP.	FY 1996 REQUEST	FY 1997 REQUEST	FY 1998 REQUEST
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT	259,509	375,270	472,101	533,144	531,108

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR WASTE DISPOSAL ACTIVITIES

1. Preface: Yucca Mountain Site Characterization Project

With the passage of the Nuclear Waste Policy Amendments Act (NWPAA) in December 1987, the tuff candidate repository site at Yucca Mountain, Nevada was selected for detailed investigation to evaluate site suitability. The characterization of the Yucca Mountain candidate site involves a program of surface-based tests, including collection and analysis of geologic, hydrologic, geochemical,and climatological data; environmental and socioeconomic evaluation; the construction of an underground Exploratory Studies Facility (ESF) and the conduct of an in-situ test program within that facility; the design of a repository and a waste package; institutional interactions with the State of Nevada and affected local governments; payments-equal-to-taxes to the State of Nevada and appropriate local jurisdictions; financial assistance for investigation, mitigation, and oversight by the State of Nevada and affected units of local government; extensive interactions with the Nuclear Regulatory Commission (NRC) and the Presidentially-appointed Nuclear Waste Technical Review Board (NWTRB); and project management activities, including a rigorous quality assurance program to ensure that all aspects of the work are conducted effectively and efficiently. In addition to the site-specific work to be implemented, geoscientific analysis, risk assessments, material characterization tasks related to spent fuel and high-level waste forms, development and analysis of performance assessment models, and defense high-level waste disposal design and performance studies will be conducted. If the Yucca Mountain candidate site is found suitable and is designated as a repository site, the site characterization program will culminate in submission of a License Application to the NRC to construct a high-level nuclear waste repository.

The FY 1996 Congressional budget request for the Yucca Mountain Project reflects the new Program Approach developed by OCRWM. The goals of this revised program include:

- o Ensure effective progress toward evaluating the suitability of the Yucca Mountain site for development as a permanent geologic repository and, if the site is suitable, proceed with the environmental impact statement, site recommendation, and licensing and construction of a repository.

- o Ensure that the technical approach and schedule are realistic and consistent with the increased funding levels proposed by the Administration and the expectations of Congress and other program stakeholders.

- o This program would result in the following key milestones for the Yucca Mountain Site Characterization Project: Technical Site Suitability evaluation in 1998; site recommendation to the President in 2000; and License Application for repository construction to the Nuclear Regulatory Commission in 2001.

To address the above goals, the major focus of the Yucca Mountain Project approach includes the following revisions:

- o Emphasis placed initially on those investigations and engineering activities deemed necessary and sufficient to support a technical site suitability evaluation of Yucca Mountain in 1998. The technical site suitability evaluation assesses those suitability conditions that depend on information from scientific and other technical site characterization, deferring consideration of other suitability conditions (environmental quality, transportation, and socioeconomic impact) to the full suitability determination in the Site Recommendation Report. The 1998 evaluation will be based on available data and supported with bounding calculations and models. If Yucca Mountain is determined to be technically suitable, additional tests will be conducted where needed to support preparation of the environmental impact statement and license application.

- o A repository designed to permit waste retrieval for up to 100 years from the start of waste emplacement rather than the 50-year retrieval period required by the Nuclear Regulatory Commission. This design goal will allow for conduct of an extended performance

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1. Preface: Yucca Mountain Site Characterization (cont.)

confirmation program, if necessary, to acquire longer-term information from monitoring perturbations to the site caused by excavation and thermal-mechanical and radiation effects and to enhance confidence in the basis for the long-term predictions of compliance with the Environmental Protection Agency standard.

The restructured Yucca Mountain Project requires no changes to the Nuclear Waste Policy Act, as amended. However, it does anticipate a new Environmental Protection Agency standard for a repository at Yucca Mountain and, if the standard is substantially different, conforming changes to the Nuclear Regulatory Commission regulation 10 CFR Part 60, as required by the Energy Policy Act of 1992. Successful implementation of the restructured program will require that the Nuclear Regulatory Commission accept the new strategy for site characterization as a suitable basis for evaluation of a potential license application, and that litigation over the implementation of the program will not lead to delays.

The FY 1996 Congressional budget request for the Yucca Mountain Site Characterization Project of $472.1 million supports a balanced program of underground exploration and surface-based scientific investigation that emphasizes early evaluation of site suitability. All work will be conducted under the approved quality assurance (QA) program. The following activities will be conducted at the Yucca Mountain candidate site:

Complete excavation of the north ramp and Topopah Spring level (TSL), and five test alcoves, two of which will provide access to the Ghost Dance Fault. Complete cross-hole hydrologic tracer experiments at the C-well complex to provide for ground-water travel time (GWTT) estimates supporting Total System Performance Assessment (TSPA) computational models. Drill additional boreholes to provide hydrologic information, to support design activities with rock properties information, and to provide control for geophysical surveys. Implement findings of the FY 1995 Calico Hills System Study to provide an improved evaluation of the primary natural barrier to radionuclide migration. Provide an initial performance confirmation program plan. Consolidate waste package performance models based on the Multi-Purpose Canister (MPC) design concept. Reach the final conceptual design phase for subsurface design, which will be supported by an update of the FY 1995 subsystem performance assessment addressing the substantially complete containment and controlled release requirements of 10 CFR Part 960. Based on inputs received during the FY 1995 public scoping process, begin preparation of the Draft Environmental Impact Statement (DEIS) with a series of environmental baseline reports. Continue tracking progress, costs, and variances using the planning and control (PACS) system. Continue safety, health, and information management activities.

The breakdown of activities and associated costs provided herein reflects a product-oriented approach for FY 1996 and beyond; the structure of the column text is therefore somewhat different than that for FYs 1994 and 1995, which is in its original Work Breakdown Structure (WBS) element form. The new format is consistent with the Yucca Mountain Site Characterization Project Five-Year Plan, Fiscal Years 1996-2000. Resources are allocated to the following product areas: site suitability, National Environmental Policy Act (NEPA), licensing, and management and compliance. It is emphasized that definition of these product areas is provided to facilitate monitoring of progress, and that a single technical program will provide the suite of products.

II. A. Summary Table: Yucca Mountain Site Characterization Project.

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
System Engineering	$5,569	$9,100	$15,031	$5,931	$17,036	$17,626
Waste Package	10,270	9,400	13,000	3,600	14,000	17,000
Site Investigations	57,194	85,782	109,200	23,418	123,000	140,585
Repository	3,476	9,400	25,000	15,600	39,116	39,000
Regulatory	20,554	26,649	30,555	3,906	44,018	44,485
Exploratory Studies Facility	56,400	99,901	102,200	2,299	103,000	81,600
Test Facilities	12,592	15,200	29,500	14,300	35,100	34,000
Project Management	15,409	16,450	16,500	50	17,000	17,500
Financial Assistance	21,100	26,200	32,473	6,273	32,473	32,473
Quality Assurance	8,742	9,590	10,500	910	11,000	11,600
Information Management	10,576	15,010	25,759	10,749	26,232	24,719
Environment, Safety, and Health	13,973	19,100	30,000	10,900	33,480	30,500
Institutional	3,989	4,500	5,000	500	5,500	6,000
Support Services	19,665	28,988	27,383	-1,605	32,189	34,020
Total, Yucca Mountain Site Characterization Project	$259,509	$375,270	$472,101	$96,831	$533,144	$531,108

II. B. Laboratory and Facility Funding Table: Yucca Mountain Site Characterization Project.

Lawrence Berkeley Lab	$1,880	$885	$885	$0	$800	$2,000
Lawrence Livermore National Lab	12,153	20,674	20,570	-104	24,945	25,165
Los Alamos National Lab	14,739	19,575	24,727	5,152	28,450	28,400
Nevada Operations Office	217,139	316,317	401,494	85,177	452,164	443,128
Oak Ridge Operations Office	15	25	25	0	25	25
Sandia National Laboratories	13,583	17,794	24,400	6,606	26,760	32,390
Total, Yucca Mountain Site Characterization Project	$259,509	$375,270	$472,101	$96,831	$533,144	$531,108

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Yucca Mountain Site Characterization Project					
System Engineering	Developed, implemented, managed, and integrated systems engineering (SE) process for all ESF and surface-based testing (SBT) activities. Continued SE activities in support of in-process design packages for ESF. Continued to update and maintain mined geologic disposal system (MGDS) design requirements documents (DRDs) for ESF and SBT. Conducted requirements traceability analyses for all designs from program level requirements documents, to YMP DRDs, to basis for designs (BFDs), to design packages. Performed compliance verification and validation efforts on ESF design to ESF design requirements (ESFDR). Evaluated impacts of multi-purpose canister (MPC) concept on Repository Design Requirements (RDR) and Engineered Barrier Design Requirements (EBDR). Conducted studies to resolve requirements identified as "to be determined" (TBD), "to	Implement, manage and integrate SE process for all ESF, SBT and ACD activities. Continue SE activities in support of in-process design packages for ESF, waste package, and repository. Develop and implement integrated MGDS Development Plan with respect to SE. Continue to update and maintain MGDS DRDs. Perform compliance verification and validation efforts on ESF design to ESFDR. Conduct studies to resolve requirements identified as TBD, TBR for DRDs and TBV in DRDs. Integrate and conduct ESF 50% and 90% design reviews. Integrate and conduct ACD systems requirements review and systems design review. Perform and update critical system studies. Maintain a process for determining MGDS life cycle cost and schedules. Analyze technical requirements and designs for ACD and ESF in terms of human factors, reliability, availability,	SITE SUITABILITY: In support of the Site Suitability product, Systems Engineering will provide revisions to the Repository Design Requirements baseline to reflect the results of the surface facility conceptual design activities. A Design Summary Report to validate waste package preliminary design efforts will also be prepared. An analysis to investigate alternative concepts of achieving preclosure radiological safety will be performed to support the Preclosure Radiological Safety higher-level finding. A Systems Thermal Study will be ongoing, and will provide data to support the Preclosure Rock Characteristics and Geochemistry Postclosure Rock Characteristics higher-level findings. ($ 8,051) NEPA: In support of the NEPA product, Systems	SITE SUITABILITY: In support of the Site Suitability product, Systems Engineering will revise the Site Design and Test Requirements and Repository Design Requirements baselines to reflect the results of Exploratory Studies Facility and subsurface design activities. A Thermal Loading Study will be ongoing and provide data to support the Geohydrology Transport higher-level finding. Systems Engineering will also develop a Performance Framework Study/ Analysis to support the Total System Performance Assessment. This study will provide design safety guidelines. ($ 7,106) NEPA: In support of the NEPA product, Systems Engineering will support the confirmatory studies of System Performance, by providing outputs from	SITE SUITABILITY: In support of the Site Suitability product, Systems Engineering will support preparation of the Technical Site Suitability report in the area of requirements compliance. ($ 250) NEPA: In support of the NEPA product, the Systems Engineering function will be involved in updating several sections of the DEIS. In support of preparation of the final EIS, Systems Engineering will perform necessary updated studies. ($ 4,480) LICENSING: In support of Licensing, a Repository Capacity Systems Engineering Study will be completed to support the development of design alternatives for

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
System Engineering (Cont'd)	be resolved" (TBR) and "to be verified" (TBV) in DRDs. Supported and verify compliance in the management planning documentation associated with establishment and implementation of SE process required by SEMP. Integrated and conducted ESF 50% and 90% design reviews. Provided limited Automated Requirements Management System (ARMS) integration. Assisted in Yucca Mountain Project Office (YMPO) corrective action request (CAR) tracking and coordination. Tracked and coordinated Management and Operating Contractor (M&O) and YMPO CARs pertaining to design process for MGDS development. Performed and updated Thermal loading, waste package performance allocation, emplacement mode, retrievability period, and TBD/TBV/TBRs resolution system studies in support of baselined design tasks and ESF. Evaluated ESF design and testing to synthesize parameters for repository/ engineered barrier system (EBS). Analyzed ESF designs and test	maintainability, system safety, security and safeguards, and integrated logistics support. Update and maintain safety analysis report for ESF and ACD. Continue to integrate and conduct value engineering (VE) studies in support of ESF and ACD. Provide a process to continually input and update Q-list and quality activities list. Revise SCP Baseline. Review designs to comply with requirements of applicable DRDs. Review and identify programmatic requirements critical to project success. Develop and maintain MGDS Concept of Operations.	Engineering will initiate studies to support the NEPA requirements for evaluating alternatives. These studies include an analysis/evaluation of certain repository design features: a Nevada Transportation Corridor Study, and a system safety and reliability study. These studies will support the development of the environmental baseline data reports. ($ 2,279) LICENSING: In support of Licensing, a Systems Engineering analysis is to be prepared to classify the permanent and temporary Exploratory Studies Facility (ESF) items and their effects on repository design. A System Element Performance Allocation Study is to be conducted regarding substantially complete containment, to the waste form, Waste Package, and natural barriers. A performance confirmation program extending well beyond the 50 year requirement	the Thermal Loading Study. Systems Engineering will also generate a Site Generated Waste Disposal Strategy where different concepts will be evaluated to support the NEPA process. ($ 2,189) LICENSING: In support of Licensing, Systems Engineering will complete an "Allocation of Shielding" system study to develop and analyze requirements between the waste transporter, waste handling repository conceptual design, and underground subelements of the MGDS. The Thermal Loading Study will also be completed to provide input and data to the ongoing TSPA activities, which require definition of the repository system. Systems Engineering will support preparing a revision to the Burn-up Credit Topical Report that will be submitted to NRC. ($ 5,078) MANAGEMENT & COMPLIANCE:	underground layout. A draft Performance Confirmation Program Plan will be prepared to implement 10 CFR 60 Subpart F. The Systems Engineering function will provide input to the final revision to the topical report on burn-up credit. Systems Engineering will complete the Waste Package Prototype Development, Fabrication and Testing Study, which supports the development of the FY 2000 Waste Package Topical Report. ($ 11,650) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, major Systems Engineering activities will focus on integration of specialty engineering disciplines during LAD and support to TSLCC. ($ 1,246)

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
System Engineering (Cont'd)	activities and site investigation activities to optimize overall system performance in terms of technical, cost and schedule. Supported maintenance of a configuration management system for purpose of configuration identification, status accounting, and auditing of technical baseline for ESF and site characterization. Maintained a process for determining MGDS life cycle cost and schedules. Coordinated MGDS input for the repository and EBS for Program-level total system life cycle cost (TSLCC) analysis. Provided engineering specialties to ensure incorporation of requirements in design process and development of a safe and reliable ESF. Updated and maintained safety analysis report for ESF. Continued to integrate and conduct value engineering (VE) studies in support of ESF. Provided a process to continually input and update Q-list and quality activities list.		in 10 CFR 60, Subpart F will be outlined in sufficient detail to facilitate NRC's guidance on the reasonable assurance compliance strategy. ($ 3,891) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, Systems Engineering will integrate specialty engineering disciplines during design development and when design changes are proposed. Planned work will also include support to the Total Systems Life Cycle Costs (TSLCC) effort. ($ 810)	In support of the Management & Compliance product, four major Project management and Systems Engineering plans will be revised to maintain a current project management baseline: Yucca Mountain Site Characterization Project Plan, Project Management Plan, Project Systems Engineering Management Plan, and the Project Systems Engineering Long-Range Plan. Systems Engineering will also provide continued specialty engineering support to ACD. ($ 2,663)	

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
System Engineering (Cont'd)	$ 5,569	$ 9,100	$ 15,031	$ 17,036	$ 17,626
Waste Package	Continued geochemical modeling and testing effort in support of site suitability evaluations. Continued geochemical testing effort to allow prediction of rock spalling behavior. Continued ESF field test planning for EBS. Initiated testing of man-made materials interactions with groundwater to establish effects on groundwater chemistry. Continued WP containment and EBS radionuclide release analyses in support of site suitability evaluations. Continued spent fuel dissolution tests and long-term spent fuel oxidation testing at PNL and HLW glass alteration testing in an air-stream environment at ANL. Maintained spent fuel approved test materials (ATMs) at PNL. Completed iron-base degradation mode survey. Initiated air-stream corrosion tests on candidate container materials to establish aqueous film formation behavior in support of thermal	Perform thermogravimetric analysis (TGA) testing to define spent fuel oxidation kinetics in 190 C to 250 C temperature range. Continue spent fuel dissolution testing and HLW glass alteration testing. Continue container materials air-stream corrosion tests crack growth tests, and initiate metal barriers long-term service condition testing. Continue degradation model development for metal barriers. Initiate microbiologically influenced corrosion test technique development for candidate container materials. Initiate analysis/evaluation of waste container extensions to support likely handling procedures. WP design activities will include detailed evaluations of WP designs for spent nuclear fuel (SNF) and defense high-level waste (DHLW) canister concepts. Evaluations will focus on MPC and other multi-barrier design concepts for SNF	SITE SUITABILITY: In support of the suitability product, waste package design efforts continue. This activity will support the preclosure radiological safety higher level finding for technical site suitability and will provide the design basis to support the key Total System Performance Assessment in 1997 for suitability. Waste package design advancement also provides specification of Multi-Purpose Canister physical interfaces. Characterization of waste forms, and engineered materials testing, will continue in limited scope to support this focused waste package design concept and will be used to refine the predictive performance models. ($ 12,000) LICENSING: In support of the licensing product, the initial topical report	SITE SUITABILITY: In support of the suitability product, design activities for the waste package will enter the final design phase. Results of these activities will directly support the postclosure system and the postclosure tectonics higher level findings, as well as Multi-Purpose Canister interface activities. Preliminary waste form characteristics and engineered materials characteristics reports will be prepared to document and substantiate assumptions used in the designs and in addressing higher level findings. These waste package design activities will be reported in Section 6 of the final Advanced Conceptual Design Report in March 1997. Revisions of the Preliminary Engineered Materials and Waste Form Characteristics Reports will be issued to support substantially complete containment compliance analyses and prediction	LICENSING: In support of licensing, the final revision to the topical report on burn-up credit and long-term criticality control for the waste package will be submitted to the Nuclear Regulatory Commission, including the isotopic data and analyses used to support the license application waste package design. Waste package License Application Design will continue, including detailed criticality, thermal, shielding, structural and component degradation analyses for waste packages to accommodate multi-purpose canister, high-level waste glass canisters, and uncanistered spent fuel. A revision to the Engineered Barrier Design Requirements baseline to reflect the results of waste package preliminary design activities will be completed. Containment barrier closure and component development will be completed and the

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Package (Cont'd)	loading decision. Restarted container material and waste form modeling efforts. Continued large block heater test to validate thermal-hydrological models and determine method of heat transfer to understand flow of water near field of rock surrounding WP. Continued integrated radionuclide release testing to determine interactions of actinide-bearing solution with rocks under flowing conditions. Continued preliminary design evaluations. Supported multi-purpose canister (MPC) design development from mined geological disposal system (MGDS) requirements perspective.	and DHLW. Engineering development tasks will investigate remote closure, nondestructive examination/in-service inspection (NDE/ISI) methods, and stress reduction methods.	on burn-up credit and long-term criticality control for the repository waste package will be issued to gain the Nuclear Regulatory Commission review and acceptance of the initial basis, methodology, analysis and experimental data needs. In addition, activities continue on the development of techniques for containment barrier closure, critical waste package component fabrication, non-destructive examination and in-service inspection, as well as stress reduction. ($ 1,000)	of the Engineered Barrier System source term for site performance assessments. ($ 7,000) LICENSING: In support of the licensing product, the waste package preliminary design will be completed and the final design of the waste package will be initiated. Containment barrier closure development and other waste package component fabrication development to support preliminary design will be completed. In addition, the design activities will provide the basis for refinement of repository interface requirements and lead to development of a Request For Proposal for waste package prototype development. A revision to the Burn-up Credit and Long Term Criticality Topical Report will be submitted to the NRC to update the basis and methodology, including the data obtained to date, especially isotopic testing results. The waste package/engineered	prototype waste package test plan will be refined. Waste package/engineered barrier and spent fuel and borosilicate waste glass degradation predictive models will be refined to support the initial final waste package design review and performance assessments. ($ 17,000)

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Package (Cont'd)				barrier degradation predictive models to support the preliminary waste package design and performance assessments will be refined. Long-term degradation tests on Engineered Barrier System materials will be continued. ($ 7,000)	
	$ 10,270	$ 9,400	$ 13,000	$ 14,000	$ 17,000
Site Investigations	Prepared Annual Technical Implementation Plan and continue integration of SBT activities with ESF activities and, technical, schedule and cost baseline. Integrated ongoing studies to derive data and analyses to support site suitability determination. Continued planning for long-term testing in the ESF, including planning for test layout and equipment requirements. Initiated underground testing in the ESF starter tunnel and alcove #1. Continued collection of otherwise irretrievable data. Continued seismic studies, especially maintenance and upgrade of seismic monitoring capability. Continued	Prepare Annual Technical Implementation Plan and continue integration of SBT activities with ESF activities and technical, schedule and cost baseline. Integrate ongoing studies to derive data and analysis to emphasize site suitability. Continue planning for testing in ESF, including planning for test layout and equipment requirements. Continue underground mapping, hydrochemistry, hydrology and major fault tests in ESF as tunnel boring proceeds. Continue collection of otherwise irretrievable data . Continue upgrade of seismic monitoring capability. Initiate seismic hazards study	SITE SUITABILITY: To support the suitability function, preclosure rock characteristics will be provided to support the associated higher-level finding; reports on probabilistic seismic hazard analysis, bulk and fracture mineral distribution, geochemical alteration, and the ground-water chemistry model will be completed; and cross-hole tracer experiments at the C-well complex will be completed to support ground-water travel time (GWTT) estimates. Drilling activities will include drilling on 2 UZ-holes to provide hydrologic information from the unsaturated zone, on 2	SITE SUITABILITY: To support the suitability function, radial borehole tests in the ESF access to the Ghost Dance Fault will be initiated to provide field-scale permeability estimates; a technical basis report for geohydrology, geochemical transport parameters, and climate will be completed; the technical basis reports for tectonics and geochemistry/ postclosure rock characteristics will be externally reviewed; studies on radionuclide transport parameters will continue; and external review of the technical basis report on geohydrology, geochemical transport	LICENSING: To support the licensing function, FY 1997 site investigation results supporting the suitability evaluation will be incorporated in the site description section of the AO; a synthesis report on site-scale flow and transport using updated rock properties and framework information will be generated to support engineered barrier system performance assessment (EBS PA) for license application design (LAD); monitoring and testing recommendations will be provided to support preparation of a draft Performance Confirmation Program Plan; and a probabilistic analysis

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Site Investigations (Cont'd)	field investigations of Quaternary faults in the site vicinity. Continued study plan development to support planning activities. Characterized soil and rock conditions that will influence and be influenced by construction of ESF subsurface access facilities. Conducted analysis of core, soil and rock properties obtained from ramp boreholes. Initiated drilling of boreholes that support systematic drilling (SD) program and continue drilling and testing in support of unsaturated zone (UZ) program. Performed borehole geophysical logging in selected new boreholes and perform gas phase testing in close proximity to anticipated ESF excavated openings. SMF will provide curatorial and core logging support. Initiated surface geophysical surveys utilizing vertical seismic profiling (VSP) adjacent to existing boreholes and seismic reflection surveys. Maintained basic geochemistry capability. Continued monitoring hydrology infiltration. Continued	for repository license application design (IAD). Continue study plan development to support planned activities. Operate drill rigs more efficiently. Initiate drilling efforts in support of water table program. ; Continue drilling efforts in support of systematic drilling (SD). Sample Management Facility (SMF) will provide curatorial and core logging support. Continue site geology/stratigraphy studies to support development of a three-dimensional framework. Continue seismic reflection profiling and vertical seismic profiling (VSP) surveys adjacent to existing boreholes. Continue infiltration studies. Continue borehole geophysical logging in selected boreholes and pneumatic testing in proximity of ESF excavated openings. Continue climatology studies. Complete initial water table testing in support of site saturated zone groundwater flow system. Complete trenching studies of Quaternary faults.	SD-holes to provide rock characteristics information, on 2 WT-holes to support characterization of the uppermost saturated zone, on one G-hole (up to 15,000 feet deep) to provide geologic control for geophysical investigations and to explore the carbonate aquifer, on four SRG-holes to support design of the south ramp of the ESF, well cleanout and reconfiguration activities and cross-hole tracer experiments at the C-well complex. Preparation of input to technical basis reports on tectonics, geochemistry, postclosure rock characteristics, human intrusion, geohydrology and postclosure radiological safety will continue; the 3-D integrated geologic model will be updated; the hydrologic characteristics of the Ghost Dance Fault will be evaluated based on ESF observations; monitoring of the unsaturated zone will be continued in previously instrumented boreholes; development of ground-water flow models will continue in	parameters, and climate will be initiated. Drilling activities will include drilling of 2 UZ-holes to provide hydrologic information from the unsaturated zone, 1 SD-hole to provide rock characteristics information, 3 WT-holes to support characterization of the uppermost saturated zone, one G-hole (up to 15,000 feet deep) to provide geologic control for geophysical investigations and to explore the carbonate aquifer, and well cleanout and reconfiguration activities. ($ 83,606) LICENSING: To support the licensing function, information from altered-zone and near-field environment reports, updated geometries of sorptive mineral zones, intermediate saturated-zone and unsaturated-zone modeling results, and refined representations of site boundary conditions will be incorporated into the site description section of the AO;	of tectonic information will be provided to support NRC interactions. Drilling activities will include drilling of 2 UZ-holes to provide hydrologic information from the unsaturated zone, 3 SD-holes to provide rock characteristics information, 3 WT-holes to support characterization of the uppermost saturated zone, initiation of drilling at the southern tracer complex, completion of the G-hole begun in FY 1997 to provide geologic control for geophysical investigations and to explore the carbonate aquifer, one H-hole to constrain hydrologic conditions at a postulated subregional flow system boundary, and well cleanout and reconfiguration activities. The effects of future climatic and tectonic scenarios on the hydrologic system will be evaluated; implications of fracture-network and porous-medium approaches to analyzing fluid flow will be evaluated; geochemical studies on mineral distributions and alteration and

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Site Investigations (Cont'd)	water table testing in support of site saturated zone groundwater flow system. Continued collection and analysis of field samples in support of paleoclimate characterization.		support of ground-water travel time evaluations; studies on radionuclide transport parameters will continue; and development of models that combine hydrology and radionuclide transport will continue. ($ 78,830) LICENSING: To support the licensing function, input to the Third Seismic Hazards Methodology Topical Report will be provided; the site description section of the License Application Annotated Outline (AO) will be updated with parameters required for flow and transport modeling and engineering design; requirements for performance confirmation monitoring of thermal and mechanical response will be established; formal expert judgment studies will be applied to estimating the probability of volcanic disruption; changes in permeability resulting from thermal effects will be examined; and scenarios for the effects of earthquake	thermal effects will be incorporated into site-scale hydrologic models to support licensing analyses; characterization of recharge in Forty-mile Wash will be refined; the sensitivity of retardation processes to variations in rock and water chemistry will be evaluated; and an assessment of the magnitude and rate of expected future climate change will be provided. ($ 39,394)	groundwater chemistry will continue; the applicability of sorption, matrix diffusion, and other laboratory data to transport modeling will be tested using larger-scale field experiments; and a long-term monitoring program for postclosure tectonics will be established.

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Site Investigations (Cont'd)			faulting on the waste isolation system will be developed. Three holes will be drilled to support the volcanic program. ($ 31,370)		
	$ 57,194	$ 85,782	$ 109,200	$ 123,000	$ 140,585
Repository	Continued management and integration of repository Advanced Conceptual Design (ACD). Continued interface support for ESF design. Performed construction monitoring tests in starter tunnel. Initiated rock mechanics testing in north ramp. Continued preparation for seal testing and ESF sealing requirements. Prepared study plans for in-situ mechanical and thermomechanical tests. Prepared initial summary report for repository/waste package ACD.	Conduct ACD, engineering studies to evaluate surface facilities layouts (nuclear-related), subsurface facilities configurations, thermal loading, emplacement modes, retrieval modes, excavation methods and transportation equipment. Provide support for management, project engineering, and integration of repository ACD. Continue technical support for ESF design and construction. Maintain design interface with surface-based testing (SBT) and waste package (WP). Provide design support for system studies, early site suitability analyses, environmental impact statement (EIS), total system life cycle cost (TSLCC), and Nuclear Regulatory Commission Site Characterization Analysis (NRC-SCA)	SITE SUITABILITY: To support the suitability function, limited design activities will emphasize the waste handling area of the surface facilities. Subsurface design will be at the final conceptual design phase. Results of surface and subsurface design activities will be reported in Sections 7 and 8, respectively, of the final ACD Report to close out numerous alternative design features and provide the basis for refining the repository requirements and concepts that will be utilized to evaluate higher level findings with respect to site suitability.	SITE SUITABILITY: To support the suitability function, repository design activities will contribute to development of a Repository Advanced Conceptual Design (ACD) Preclosure Safety Analysis Report containing preclosure radiological safety analyses to support evaluation of the preclosure system guideline for Radiological Safety. ($ 9,779) LICENSING: To support the licensing function, the initial LAD Report will be issued, which includes the limited scope interim surface and initial subsurface Title I designs; major updates to the AO will incorporate the results of repository ACD and	LICENSING: To support the licensing function, the first Interim LAD Report will be issued, which includes interim surface and subsurface Title I designs; a major contribution will be made to the report on PA implications of the areal power density options and constraints imposed by the usable area available for the repository; input will be provided to the draft Performance Confirmation Program Plan; and interfaces with WP and EBS evaluation programs will continue.

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Repository (Cont'd)		concerns. Develop site preparation alternatives and waste treatment process and facility concepts. Continue development of computer codes for ESF design verification. Perform design assumption substantiation analyses Prepare rock mechanics data summary reports. Provide ALARA analysis update report.		the impact of conceptual design on the repository concept of operations; additional definition of the repository system will be provided to support the Thermal Loading Study; and input to the Burn-up Credit and Long Term Criticality Topical Report will be provided. ($ 29,337)	
	$ 3,476	$ 9,400	$ 25,000	$ 39,116	$ 39,000
Regulatory	Prepared responses to and track comments on SCP and related documents. Coordinated and participated in technical/peer reviews. Supported interactions with NRC, NWTRB, ACNW, and similar organizations. Continued support of study plan preparation, review and approval. Prepared Semi-Annual Site Characterization Progress Reports. Continued preparation of selected LA annotated outline sections. Continued issue-resolution activity for selected issues. Prepared limited updates and maintained the technical data	Prepare responses to and track comments on SCP and related documents. Coordinate and participate in technical/peer reviews. Support interactions with NRC, NWTRB, ACNW, and similar organizations. Support regulatory issue resolution. Continue preparation of selected LA annotated outline sections. Refine regulatory strategies and support their implementation per Regulatory Compliance Plan. Continue preparation of Semiannual Site Characterization Progress Reports. Update and maintain TDNS. Update and	SITE SUITABILITY: The Regulatory functional area is to produce a number of Technical Basis Reports. The first is Preclosure Safety Technical Basis Report, which is to contain the preclosure system performance assessments reflecting the Advanced Conceptual Design for operational-phase facilities. The Tectonics Technical Basis Report is to be prepared and reviewed. It is to address the coupled effects of volcanism and tectonics on total system performance. The Geochemistry/ Postclosure Rock	SITE SUITABILITY: In support of Technical Site Suitability, Technical basis report for tectonics will be externally reviewed; the technical basis report for geochemistry and postclosure rock characteristics will be externally reviewed; and an external review of the technical basis report on geohydrology, geochemical transport parameters, and climate will be initiated. In addition, the ACD Preclosure Safety Analysis Report will be completed. The Preclosure Radiological Safety technical basis report supporting technical guidelines	SITE SUITABILITY: In support of Technical Site Suitability, the Technical Site Suitability Report is to be issued. Also, an external review of the TSPA 1997 and natural and engineered barrier subsystems performance assessments will be initiated. A summary of TSPA 1997 will be written in support of the Technical Site Suitability Report. ($ 11,335) NEPA: In support of NEPA compliance, the Performance Assessment function will be

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory (Cont'd)	management system (TDMS). Updated and maintained Technical Data Parameter Dictionary. Utilized and maintained the automated technical data tracking (ATDT) system. Updated and maintained controlled narrative Reference Information Base (RIB). Updated the Geologic and Engineering Materials Bibliography of Chemical Species (GEMBOCHS) component of Technical Data Base (TDB). Provided spatial data analyses and map products in support of site characterization (SC) and design activities. Evaluated and integrated new data from surface-based testing (SBT), ESF Title II design, WP and repository advanced conceptual design (ACD) into PA models. Placed highest priority on continued PA support to ESF testing and design, and repository ACD. Provided calculations to support Q-list development. Continued mathematical model and computer code improvement and verification for natural system and total system PA. Continued WP and	maintain Technical Data Parameter Dictionary. Utilize and maintain ATDT system. Update and maintain controlled narrative RIB. Update the GEMBOCHS and Geologic and Environmental Nodal Information Study and Evaluation System (GENISES) components of TDB. Provide spatial data analyses and map products in support of SC and design activities. Continue integration of PA with SC. Evaluate and integrate new site data from SBT, ESF construction and testing, WP and repository ACD. Focus PA on critical site suitability uncertainties. Continue evaluations of planned surface-based and ESF tests. Continue documentation of scenario event trees and scenario models. Continue limited detailed-process modeling for justifying assumptions of total system PA codes. Continue limited laboratory and field experiments of fluid flow and contaminant transport. Begin preparing PA computer codes for entry into QA software configuration	Characteristics Technical Basis Report is to be subjected to peer review. The Geohydrology/Transport Technical Basis Report will be written, and prepared for peer review. In addition to these Technical Basis Reports, there will be several regulatory assessments. The first regulatory assessment will address the preclosure system guideline for ease and cost of siting, construction, operation, and closure. This assessment, which considers whether reasonably available technology exists for these activities, will need to consider the site's surface characteristics, rock characteristics, tectonics and hydrology. A second regulatory assessment will address the disqualifying condition for the postclosure human intrusion technical guideline. This assessment will use information from current total system performance assessments as well as site geochemistry, mineralogy and petrology data. In support of Technical	for population density, meteorology, offsite installations, and site ownership and control will be completed. A regulatory assessment will be done for the preclosure radiological safety systems guideline and supporting technical guideline and for the Higher Level Finding for the postclosure tectonics disqualifying condition and preclosure qualifying and disqualifying conditions. Other regulatory assessments will address the qualifying condition for the preclosure system guideline on ease and cost of siting, construction, operation, and closure; as well as the disqualifying conditions for the postclosure human intrusion technical guideline. Total System Performance Assessment 1997 will be completed, as will a new subsystem performance assessment addressing substantially complete containment and controlled releases. Finally, an assessment of pre-emplacement ground-water travel time will be completed.	involved in supporting preparation and issuance of the Final EIS. ($ 2,750) LICENSING: In support of Licensing, information from site characterization will be evaluated for use in licensing and incorporated into MGDS LA AO Revision 3 sections, as appropriate, including a significant update to Chapter 3 to reflect the FY 1997 site investigation results supporting Technical Site Suitability. An Engineered Barrier Subsystem performance assessment report will be issued describing a focused set of calculations for the LAD report. An Updated Waste Isolation Evaluation of Cumulative Impacts of Tracers, Fluids and Materials (TFMs) report will be issued to identify additional testing needed to refine uncertainties introduced through the use of TFMs. A fourth annual report will be issued on Performance Assessment

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory (Cont'd)	engineered barrier systems (EBS) PA activities commensurate with ACD work scope. Continued documentation of scenario event trees and of preliminary scenario models. Continued basic laboratory and field experiments of fluid flow and contaminant transport. Continued work in benchmarking and validation of PA codes and models through participation in international cooperative efforts. Completed and published new total system performance assessment (TSPA).	system. Continue benchmarking of PA codes and models through participation in international cooperative efforts. Pursue resolution of additional regulatory issues defined in SCP. Incorporate important features of preliminary three-dimensional site model, which is to be available early in FY 1995, into process-level and total system-level performance assessment codes. Perform sensitivity studies to verify appropriateness of higher level model abstractions based on three-dimensional site model. Continue enhancement of fracture-flow capabilities in selected process-level codes. Perform total system performance assessment in preparation for addressing site suitability. Continue support to testing, construction and design through appropriate waste isolation and other analyses as required.	Site Suitability, the Performance Assessment function will evaluate potential postclosure waste isolation impacts for tectonics, geochemistry, and rock characteristics. An evaluation of the human intrusion issue may also be included. The results of this work is to be reported in technical basis documents that support the evaluation of the postclosure qualifying conditions for these technical areas identified in 10 CFR Part 960. As work on the 1996 Total System Performance Assessment (TSPA 1996) winds down (which is being done in support of the NEPA process), data gathering and code preparation will already be in progress for TSPA 1997. TSPA 1997 is to be the major input from the performance assessment function to the total system performance assessment technical basis document for suitability. ($ 15,555) NEPA: In support of NEPA compliance, the	($ 21,620) NEPA: In support of NEPA compliance, several of the EIS baseline reports drafted in FY 1996 will be finalized in FY 1997, requiring input from the Performance Assessment function. In particular, some performance assessment information will be included in EIS baseline reports covering site suitability issues such as the impact on performance of the site geology, surface and ground-water hydrology, tectonics, and climatology. This information may be drawn largely from the 1996 Total System Performance Assessment (TSPA 1996) baseline report that addresses the likelihood of the mined disposal system meeting regulatory performance goals. In addition, preclosure performance assessment results will be required for the EIS baseline report on system safety and reliability. Finally, it is expected that the results of subsystem	Recommendations, describing uncertainties that may be addressable through further site characterization or testing. The Postclosure Tectonics Hazard Assessment Topical Report will be issued to seek NRC review and acceptance of the absence of potentially adverse conditions from the occurrence of future natural phenomena including earthquakes, volcanic activity, intrusive activity and coupled tectonic-hydrologic processes that could directly or indirectly change the waste isolation system and adversely affect the performance of a geologic repository. The Subsystem Models Topical Report will be issued to describe the content, organization, and scientific basis for the site subsystem model to be used to evaluate the GWTT regulatory requirement, as well as the model or models to be used to address the Waste Package substantially complete containment, and the Engineered Barrier System controlled release performance

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory (Cont'd)			Performance Assessment function will plan its FY 1996 Total System Performance Assessment to address the results of the EIS scoping process and prepare a baseline report for use in development of the Preliminary EIS. ($ 3,000) LICENSING: In support of Licensing, Revision 1 of the Mined Geologic Disposal System (MGDS) License Application (LA Annotated Outline (AO) will be issued and will embody NRC's final Format and Content Regulatory Guide for the LA and their LA Review Plan. A summary report is to be issued describing work done in Waste Package and Engineered Barrier System Performance Assessment in support of Advanced Conceptual Design (ACD). The second annual update of recommendations, based on performance assessment modeling and analyses, to help focus site characterization and testing on major uncertainties is to be issued. The Third Seismic Hazards Methodology Topical	performance assessments will be used in the baseline report on alternatives to certain repository design features presented in the Advanced Conceptual Design documentation. ($ 3,750) LICENSING: In support of Licensing, Revision 2 of the MGDS LA AO will be issued. It will represent a major update to chapters 4 and 5 to incorporate the results of repository ACDs, and to Chapter 7 to reflect the impact of conceptual design on the repository concept of operations. In addition, NRC's comments on MGDS LA AO Revision 1 will be incorporated, as appropriate. The third annual update of Performance Assessment recommendations, based on its modeling and analyses, will be issued to help focus site characterization and testing on major uncertainties. The Performance Assessment function will be involved in determining, from volcanic effects data,	requirements. The Technical Data Management function will assure that all technical data from the site suitability evaluation efforts which are also pertinent to the LA are incorporated into the RIB and GENISES by the end of this year, and is consistent and traceable. ($ 30,400)

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III Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory (Cont'd)			Report is to be issued for NRC review, to gain acceptance of the methodology for defining seismic inputs to repository design and containment performance assessment. The Groundwater Travel Time (GWTT) Topical Report will be issued to report on the development of a methodology for demonstrating compliance with NRC's requirement in 10 CFR 60.113(a)(2). Computer code testing, model development, uncertainty and sensitivity studies, as well as, selected laboratory and natural analogue studies to address process model validity are ongoing Performance Assessment activities. An update is to be provided for the estimate of the potential cumulative waste isolation effects of tracers, fluids and materials used in ESF excavation, construction and testing. The technical data management function will continue to compile and assure the consistency and traceability of technical data, using the Reference Information Base (RIB)	whether the probability of radiological releases from future surface and subsurface volcanic activity through or near a repository would exceed regulatory limits. An updated estimate is to be made of the potential cumulative waste isolation effects of tracers, fluids and materials used in excavation, construction and testing. The technical data management function will continue to compile and ensure the consistency and traceability of technical data, using the RIB and GENISES database systems. ($ 18,648)	

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory (Cont'd)			and GENISES database systems and the Automated Technical Data Tracking System. The LSS design will continue to implement requirements developed in FY 1995. ($ 12,000)		
	$ 20,554	$ 26,649	$ 30,555	$ 44,018	$ 44,485
Exploratory Studies Facility	Received, assembled and checked-out 7.6 meter (25-foot) TBM. Began TBM operations in north ramp. Initiated procurement and construction of water storage tanks, booster pump station, water lines, on-pad sewer and subsurface wastewater systems, including associated sitework. Constructed switchgear building. Completed temporary 69 kV power line to north portal pad and procured replacement transformers. Continued design for north portal pad facilities, completed design for north ramp, started design for Topopah Spring Level (TSL) main drift, continued Integrated Data System (IDS) design. Provided Title III support to ongoing construction. Initiated underground	Continue TBM operation along north ramp. Complete design for TSL main drift. Complete design for north portal facilities, continue design for IDS, initiate procurement for IDS components. Construct balance of utility systems for north portal pad, procure and construct change house/portal control building. Complete switchgear building construction. Complete design and construction to upgrade 69 kV power system from 10 MVA to 20 MVA capacity. Construct muck handling conveyor systems and construct first segment of muck storage area. Extend north portal pad. Excavate second test alcove located in north ramp at Bow Ridge Fault and commence testing. Excavate third test	SITE SUITABILITY: Complete TBM operation in the north ramp and continue into the TSL main drift. Excavate five test alcoves, including the two Ghost Dance access. Complete construction of muck storage area. Complete installation of capacitor banks at Stockade Wash substation. Complete design of the TSL main drift. Complete design of the south ramp and portal. Continue phased approach for IDCS design, procurement and installation. Continue test planning, coordination and construction test support. Provide ongoing Title III engineering support to construction. Provide overall project engineering,	LICENSING: Site preparation will be completed for the South Portal area pad and access road. Complete TBM operations in the TSL main drift and south ramp. Construct the south portal pad, access road and utilities. Excavate five test alcoves. Procure 5.5 meter TBM. Begin design of the north ramp extension and Calico Hills access. Continue phased approach for IDCS design, procurement and installation. Continue test planning, coordination and construction test support. Provide ongoing Title III engineering support to construction. Provide overall project engineering, construction management	LICENSING: Complete design of the north ramp extension, heater test alcoves and Calico Hills access. Receive and assemble 5.5 meter TBM. Excavate north ramp extension. Continue phased approach for IDCS design, procurement and installation. Continue test planning, coordination and construction test support. Provide ongoing Title III engineering support to construction. Provide overall project engineering, construction management and test support. Operate and maintain ESF equipment and facilities.

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Exploratory Studies Facility (Cont'd)	testing in test alcove located in north ramp starter tunnel. Continued test planning and coordination. Procured conveyor systems for ESF muck handling. Provided overall project engineering, construction management and test support.	alcove and commence testing. Continue test planning, coordination and construction test support. Provide ongoing Title III engineering support to construction. Provide overall project engineering, construction management and test support. Operate and maintain ESF equipment and facilities.	construction management and test support. Operate and maintain ESF equipment and facilities. ($ 98,200) LICENSING: Complete design of the south portal pad, access road and utilities. Excavate the thermal test alcove off the north ramp. ($ 4,000)	and test support. Operate and maintain ESF equipment and facilities.	
	$ 56,400	$ 99,901	$ 102,200	$ 103,000	$ 81,600

III Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Test Facilities	Continued Title I and Title II design of General Support Facility Area (GSFA) site and roads, water system, sewage system, and electrical distribution system. Started Title I and II design of GSFA communication system. Completed annual revision of Site Development Plan. Completed Consolidated Conceptual Design Report for Area 25 infrastructure facilities. Provided field surveys and Title III inspection. Began implementation of Operation and Maintenance (O&M) Management Program.	Complete modifications to J-13 water tank and Field Operations Center (FOC) fire protection water line extension. Provide field surveys and Title III Inspection. Start and complete restoration of seismic damage to buildings and Area 25 fire protection water system. Complete annual revision to the Site Development Plan. Continue to provide direct support to the Site Manager for design coordination and review, fiscal year planning, management system improvement, job packages, records management, development of surface-based	SITE SUITABILITY: To support the suitability and licensing functions, site facilities and support services for all field activities supporting site characterization will be provided, including: Operations and Maintenance of all site buildings, roads, utilities, and services; access and visitor control services; bus transportation for all field activities; management of the Operations and Maintenance and capital asset systems; transportation and	SITE SUITABILITY: Continuing site facilities and support services for all field activities supporting site characterization will be provided, as detailed in the FY 1996 workscope. ($ 9,100) NEPA: In support of the NEPA product, Test Facilities will provide field support facilities and services for ongoing site environmental monitoring and permitting activities. ($ 1,000)	SITE SUITABILITY: Continuing site facilities and support services for all field activities supporting site characterization will be provided, as detailed in the FY 1996 workscope. ($ 7,000) NEPA: In support of the NEPA product, Test Facilities will provide field support facilities and services for ongoing site environmental monitoring and permitting activities. ($ 1,000)

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Test Facilities (Cont'd)	Continued to provide direct support to site manager for design coordination and review, fiscal year planning, management system improvement, job package records management, development of surface-based testing functional requirements, NTS liaison, public outreach support, visitor control, photographic and Geographic Information System (GIS) support. Continued to provide administrative/clerical services to participants, motor pool, logistical support, safety, health, and environmental, fire protection, medical, security services, telephone, communication, calibration services, YMP tours, bus service, and janitorial services. Continued to provide maintenance of roads, power, water, and building. Continued to provide YMP's share of NTS operation costs.	testing functional requirements, Nevada Test Site (NTS) liaison, public outreach support, visitor control, photographic and GIS support. Continue to provide administrative/ clerical services to participants, motor pool, logistical support, environmental, safety and health, fire protection, medical, security, telephone, communications, and calibration services. Continue YMP tours and bus services. Continue to provide maintenance of roads, power, water, buildings, and janitorial services. Continue to provide YMP's share of NTS operation costs.	services for public tours; light duty vehicles; rehabilitation/ upgrades required to existing facilities and utilities as required for compliance; direct and administrative support to Project participants at the site; field permitting programs; occurrence reporting; energy management programs; Geographic Information System; annual Site Development Plan; and general field engineering support. ($ 10,500) NEPA: In support of the NEPA product, Test Facilities will provide field support facilities and services for ongoing site environmental monitoring and permitting activities. ($ 1,000) LICENSING: (Budget for Test Facilities is allocated between the Site Suitability and Licensing products based on their relative use of those	LICENSING: Note: Budget for Test Facilities is allocated between the Site Suitability and Licensing products based on their relative use of those facilities. For work scope, see the Site Suitability product above. ($ 10,000) MANAGEMENT & COMPLIANCE: In support of the Management and Compliance product, continue to make payments to the Nevada Operations Office for NTS allocation for support and logistical services at the Yucca Mountain Site, 100 miles northwest of Las Vegas. ($ 15,000)	LICENSING: Continuing site facilities and ongoing services, as detailed in the FY 1996 workscope, will continue to support all site characterization field activities. ($ 11,000) MANAGEMENT & COMPLIANCE: In support of the Management and Compliance product, continue to make payments to the Nevada Operations Office for NTS allocation for support and logistical services at the Yucca Mountain Site, 100 miles northwest of Las Vegas. ($ 15,000)

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Test Facilities (Cont'd)			facilities. For work scope, see the Site Suitability product above.) ($ 8,000) MANAGEMENT & COMPLIANCE: In support of the Management and Compliance product, continue to make payments to the Nevada Operations Office for NTS allocation for support and logistical services at the Yucca Mountain Site, 100 miles northwest of Las Vegas. ($ 10,000)		
	$ 12,592	$ 15,200	$ 29,500	$ 35,100	$ 34,000
Project Management	Continued to manage and control YMP work, including TPO management, ESF design and construction, engineering, SBT, and WP development, liaison with State of Nevada and local governments, interaction with NRC on licensing issues, near-field environment and modeling in support of SC. Provided management support in areas of budgeting, cost and schedule planning, and control.	Manage and control YMP work, including TPO management, ESF design and construction, engineering, SBT, and WP development, liaison with State of Nevada and local governments, interaction with NRC on near-field environment and modeling in support of SC. Provide management support areas of budgeting, cost and schedule planning, and control. Continue participant performance measurement	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance product, continue to provide general management, strategic and fiscal year planning, baseline and configuration management, fiscal year performance measurement, and funds management. Planning will focus on annual updates to the Five Year Plan and Project	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance product, continue to provide general management, strategic and fiscal year planning, baseline and configuration management, fiscal year performance measurement, and funds management. Planning will focus on annual updates to the Five Year Plan and Project	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance product, continue to provide general management, strategic and fiscal year planning, baseline and configuration management, fiscal year performance measurement, and funds management. Planning will focus on annual updates to the Five Year Plan and Project

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Project Management (Cont'd)	Continued development and implementation of IMPS. Continued participant performance measurement in support of change control system. Continued to collect project management planning and control data for development, implementation and maintenance of PACS. Continued to develop technical milestone data bases. Continued to provide support to project management control processes and interaction with ESAAB, EEI, ICE team, GAO and DOE IG. Continued to manage project-level change control process. Continued to provide controls required to process project plans and procedures.	in support of change control system. Continue to collect project management planning and control data for development, implementation and maintenance of PACS. Continue to develop technical milestone data bases. Continue to provide support to management control processes and interaction with ESAAB, EEG, ICE team, GAO, DOE IG and other management oversight organizations. Continue to provide controls required to process project plans and procedures and conduct compliance reviews.	Technical Implementation Plan, and preparation of annual budget requests. The revised project baseline supporting the program approach will be submitted to the Energy System Acquisition Advisory Board (ESAAB) for approval. Baseline and configuration management will focus on controlling, documenting and reporting cost, schedule, technical and configuration/design changes. Controlled and baselined plans and procedures will continue to be updated, as appropriate. The Planning and Control System (PACS) will continue to be used for performance measurement and variance analyses. Funds management and commitment tracking will continue.	Technical Implementation Plan, and preparation of annual budget requests. Baseline and configuration management will focus on controlling, documenting and reporting cost, schedule, technical and configuration/design changes. Controlled and baselined plans and procedures will continue to be updated, as appropriate. The Planning and Control System (PACS) will continue to be used for performance measurement and variance analyses. Funds management and commitment tracking will continue.	Technical Implementation Plan, and preparation of annual budget requests. Baseline and configuration management will focus on controlling, documenting and reporting cost, schedule, technical and configuration/design changes. Controlled and baselined plans and procedures will continue to be updated, as appropriate. The Planning and Control System (PACS) will continue to be used for performance measurement and variance analyses. Funds management and commitment tracking will continue.
	$ 15,409	$ 16,450	$ 16,500	$ 17,000	$ 17,500

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Financial Assistance	Provided direct payment to State of Nevada of $5.5 million for its oversight responsibilities pursuant to NWPA, as amended. Provided direct payments totaling $7.0 million to affected local governments to conduct appropriate activities pursuant to NWPA. Provide funding of $3.7 million through cooperative agreements to the University of Nevada at Las Vegas (UNLV), the University of Nevada at Reno (UNR), the Desert Research Institute (DRI), the Community College of Southern Nevada (CCSN), and the Harry Reid Center for Environmental Studies to conduct infrastructure studies and other research and development work as directed. These funding levels were determined by Congress. Provided Payments Equal to Taxes (PETT) in accordance with NWPA, as amended.	Provide direct payment of $5.5 million to the State of Nevada for its oversight responsibilities pursuant to NWPA, as amended. Provide for direct payments totaling $7.0 million to affected local governments to conduct appropriate activities pursuant to NWPA. Provide funding of $3.7 million through cooperative agreements of to UNLV, UNR, DRI, CCSN, and Harry Reid Center for Environmental Studies to conduct infrastructure studies and other research and development work as directed. These funding levels were determined by Congress. Provide PETT in accordance with NWPA, as amended.	MANAGEMENT & COMPLIANCE: Continue to provide direct payments to State of Nevada and Affected Units of Local Government (AULG) for their oversight responsibilities pursuant to NWPA. Funding of $10.1 million is included for the State of Nevada, which is the level requested by the State. Funding of $12.6 million is included for AULG, which is based on the consolidated AULG request. Funding of $3.7 million is also included for contractual agreements with the University of Nevada System to conduct studies and other research and development work as directed. Provide PETT based on the Yucca Mountain Site Characterization Project being taxed as if it were a private entity.	MANAGEMENT & COMPLIANCE: Continue to provide direct payments to State of Nevada and Affected Units of Local Government (AULG) for their oversight responsibilities pursuant to NWPA. Funding of $10.1 million is included for the State of Nevada, which is based on the FY 1996 level. Funding of $12.6 million is included for AULG, which is based on the FY 1996 level. Funding of $3.7 million is also included for contractual agreements with the University of Nevada System to conduct studies and other research and development work as directed. Provide PETT based on the Yucca Mountain Site Characterization Project being taxed as if it were a private entity.	MANAGEMENT & COMPLIANCE: Continue to provide direct payments to State of Nevada and Affected Units of Local Government (AULG) for their oversight responsibilities pursuant to NWPA. Funding of $10.1 million is included for the State of Nevada, which is based on the FY 1996 level. Funding of $12.6 million is included for AULG, which is based on the FY 1996 level. Funding of $3.7 million is also included for contractual agreements with the University of Nevada System to conduct studies and other research and development work as directed. Provide PETT based on the Yucca Mountain Site Characterization Project being taxed as if it were a private entity.
	$ 21,100	$ 26,200	$ 32,473	$ 32,473	$ 32,473

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Quality Assurance	Continued development and maintenance of QA program. Continued efforts in the area of development of QA programs and implementing procedures. Continued to review documents for compliance with OCRWM QA program. Maintained requirements tracking matrix. Continued to provide QA guidance and direction to affected organizations. Continued implementation and maintenance of indoctrination, training, qualification and certification requirements for personnel performing quality-affecting work. Continued to implement corrective actions and maintain QA program deficiency tracking system.	Provide for QA oversight and support to field activities. Continue to develop and maintain QA programs and implementing procedures. Continue to review documents for compliance with OCRWM QA program. Provide QA guidance and direction to affected organizations. Maintain requirements tracking matrix. Conduct QA audits and surveillances of quality-affecting work, identify conditions adverse to quality, and initiate appropriate documentation and follow-up. Continue corrective action and maintain QA program deficiency tracking system. Provide QA indoctrination training, qualification, and certification requirements for personnel performing quality-affecting work.	LICENSING: To support the licensing function, the QA controls will continue through development and maintenance of affected organizations' QA programs consisting of all those planned and systematic actions necessary to provide adequate confidence that the information to obtain a license for siting, constructing, and operating a geologic repository will be sufficient to comply with Federal regulations. ($ 9,000) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, activities will include core QA oversight, coordination, and planning of systematic actions by affected organizations responding to the non-regulatory aspects of QA outlined in DOE Order 4700.1. These activities include: identify and resolve quality concerns, implement quality	LICENSING: To support the licensing function, the QA controls will continue through development and maintenance of affected organizations' QA programs consisting of all those planned and systematic actions necessary to provide adequate confidence that the information to obtain a license for siting, constructing, and operating a geologic repository will be sufficient to comply with Federal regulations. ($ 9,500) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, activities will include core QA oversight, coordination, and planning of systematic actions by affected organizations responding to the non-regulatory aspects of QA outlined in DOE Order 4700.1. These activities include: identify and resolve quality concerns, implement quality	LICENSING: To support the licensing function, the QA controls will continue through development and maintenance of affected organizations' QA programs consisting of all those planned and systematic actions necessary to provide adequate confidence that the information to obtain a license for siting, constructing, and operating a geologic repository will be sufficient to comply with Federal regulations. ($ 10,000) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, activities will include core QA oversight, coordination, and planning of systematic actions by affected organizations responding to the non-regulatory aspects of QA outlined in DOE Order 4700.1. These activities include: identify and resolve quality concerns, implement quality

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Quality Assurance (Cont'd)			management principles, and develop and maintain controls that aid in assuring quality achievement in DOE programs. QA activities by affected organizations will include support of audits and surveillances, coordination and tracking of internal nonconformance and corrective action processes in support of lab and field testing, QA document reviews, and general implementation of QA program guidance from YMSCO. ($ 1,500)	management principles, and develop and maintain controls that aid in assuring quality achievement in DOE programs. QA activities by affected organizations will include support of audits and surveillances, coordination and tracking of internal nonconformance and corrective action processes in support of lab and field testing, QA document reviews, and general implementation of QA program guidance from YMSCO. ($ 1,500)	management principles, and develop and maintain controls that aid in assuring quality achievement in DOE programs. QA activities by affected organizations will include support of audits and surveillances, coordination and tracking of internal nonconformance and corrective action processes in support of lab and field testing, QA document reviews, and general implementation of QA program guidance from YMSCO. ($ 1,600)
	$ 8,742	$ 9,590	$ 10,500	$ 11,000	$ 11,600
Information Management	Continued to provide computer services and support; maintained, executed and updated disaster recovery and contingency plans; assisted in update of Computer Protection Plan and to provide inputs for long- and short-range IRM plans; provided user support to YMP personnel; provided support for InfoSTREAMS. Ensured compliance with GOSIP and other DOE-mandated standards. Continued to	Continue operation of local records centers at National Laboratories, U.S. Geological Survey, and Las Vegas. Process and index all records submitted by local records centers. Create microfilm copies of all program records. Distribute controlled documents to project personnel. Manage and integrate YMP automated data processing system. Develop and maintain project-wide software.	LICENSING: In support of the Licensing product, continue to implement requirements developed in FY 1995 for the Licensing Support System (LSS). A make-versus-buy and financial analysis will be completed to support configuration and construction decisions. Interfaces with records systems will be developed. ($ 10,000)	LICENSING: LSS design will continue. ($ 10,000) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, continue management support functions of: operation and maintenance of computer networks, standardization of	LICENSING: Complete LSS design. Purchase and install equipment. Initiate records processing to support system acceptance testing and approval. ($ 8,000) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, continue

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management (Cont'd)	operate, manage and process all project records in support of OCRWM records management program; operated field records center, participant local records centers, and central records facility; and operated and manage YMP facilities and subsystems to provide information necessary to support submittal of LA.	Procure system to support NRC/affected units of government access to technical data. Acquire/expand telephone switch for Bank of America Complex and provide a switch for the new office facility. Acquire components, manage and operate local area network. Continue to upgrade extended network. Expand site services, provide televideo equipment and services to the Field Operations Center, procure replacement printers and upgrade the VAX central processing units (CPUs) to meet expanded data base and software demands. Continue development of InfoSTREAMS and provide necessary system maintenance to maintain operational capability. Support Licensing Data Management System demonstration and evaluation, and provide necessary system maintenance to maintain functionality. Support development of Licensing Support System requirements and strategy.	MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, continue management support functions of: operation and maintenance of computer networks, standardization of office automation software, operation and maintenance of telecommunications systems, and protection and retrievability of records. ($ 15,759)	office automation software, operation and maintenance of telecommunications systems, and protection and retrievability of records. ($ 16,232)	management support functions of: operation and maintenance of computer networks, standardization of office automation software, operation and maintenance of telecommunications systems, and protection and retrievability of records. ($ 16,719)

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management (Cont'd)	$ 10,576	$ 15,010	$ 25,759	$ 26,232	$ 24,719
Environment, Safety, and Health	ENVIRONMENT: Acquired requisite permits. Conducted preactivity surveys. Conducted environmental monitoring and mitigation efforts for air quality, meteorology, archaeology, radiological studies, terrestrial ecosystems, and water resources. Conducted environmental and mission-essential monitoring, environmental regulatory compliance audits and surveillances. Continued desert tortoise studies and monitoring. Prepared and updated Advisory Council on Historic Preservation (ACHP) Reports, Annual Site Environmental Report (ASER), Environmental Monitoring & Mitigation Plan (EMMP), and required Federal and state reports. Conducted radiological health and safety program to maintain dose monitoring, tracking and evaluations, limited sampling and analysis, and data validation to insure ALARA	ENVIRONMENT: Support program mission by issuing EIS Notice of intent, completing EIS scoping, and developing a draft EIS Implementation Plan, EIS Management Plan and EIS Public Participation and Scoping Plans. Write Environmental Field Activity Plans and initiate survey and monitoring programs for new studies such as aesthetics, soils, and noise. Initiate water quality sampling and analyses including equipment procurement and installation. Acquire requisite ESF site permits and land access approvals. Conduct preactivity surveys commensurate with increased SC. Conduct monitoring and mitigation efforts for air quality, meteorology, cultural resources, terrestrial ecosystems (including desert tortoise study/protection program), reclamation, and water resources. Conduct environmental regulatory compliance audits, surveillances, and hazardous materials	NEPA: To support the NEPA function, responses to EIS scoping comments will be prepared as part of the public involvement process; implementation of the Public Participation Plan will continue; ongoing environmental monitoring of air quality, radiological activity, terrestrial ecosystems, archaeological evidence, and water quality and quantity data will continue and corresponding baseline reports will be prepared; and environmental data collection for noise, soils, aesthetics, and any other parameters required as a result of scoping will be initiated. ($ 18,884) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, environmental compliance program activities will consist of identifying changes to applicable	NEPA: To support the NEPA function, baseline reports and technical information related to archaeology and cultural resources, land use, air quality, design, transportation, radiological conditions, noise, aesthetics, thermal loading, soils, and performance assessment will be generated; environmental monitoring for air quality, radiological conditions, terrestrial ecosystems, archaeological conditions, water quality and water quantity will continue. Impact analyses will be initiated. Plans will be developed for managing public comments on the Draft Environmental Impact Statement (DEIS). ($ 22,147) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, environmental compliance program activities will consist	NEPA: To support the NEPA function, the Preliminary and Final DEIS will be completed; the EPA Certificate of Availability of the DEIS and DOE's Notice of Availability of the DEIS will be published; preparations for the six-month public review of the DEIS will be made; the database for tracking public comments will be operational; and ongoing environmental monitoring will continue. ($ 18,583) LICENSING: To support the licensing function, environmental data generated for the DEIS will be provided to support the LA AO including: 1) water sources, quality and users; 2) climate and meteorology; 3) population and attendant activities and potential impact on the ground-water flow system; 4) radiological monitoring; and 5) land

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Environment, Safety, and Health (Cont'd)	implementation. Managed existing archaeological artifacts/records and outside agency coordination. Continued socioeconomic monitoring and PETT support. Continued consultation and interactions with Native Americans per American Indian Religious Freedom Act (AIRFA). Performed measuring and testing equipment (M&TE) and Quality Assurance (QA) liaison interface functions. Developed a study plan to coordinate meteorological monitoring programs, continue to monitor conditions of population centers relative to wind patterns, and initiate terrestrial ecosystems thermal loading study design. SAFETY AND HEALTH: Provided safety and health management and administration, compliance, program development, training, engineering and design reviews, emergency preparedness, medical, fire protection, safety assessment, injury and illness reporting and recordkeeping, and industrial hygiene	management program. Initiate limited bio-remediation and limited remediation for historical or incidental regulated materials spills. Continue radiological health and safety program to maintain dose monitoring, tracking and evaluations and data validation to insure ALARA implementation. Expand sampling and analysis to include radiological water and soil sampling and analysis and resume biota analysis. Prepare and update ACHP, ASER, and EMMP annual reports, and other required Federal and state reports. Conduct consultations and interactions with Native Americans per NEPA, and the Programmatic Agreement (PA) with ACHP. Manage archaeological artifacts/records and continue outside agency coordination. Continue implementation of environmental programs that support site suitability, and terrestrial ecosystems thermal loading study design. Continue socioeconomic monitoring, profiles, PETT support and	environmental laws and regulations; obtaining and maintaining necessary permits to construct and operate; hazardous materials and solid waste management; environmental compliance self appraisals, audits, and surveillances; and preparation and maintenance of YMP environmental plans, administrative procedures and other documents, and preparation of annual site environmental reports as required by DOE Order 5400.1. The Safety and Health (S&H) compliance program provide engineering design reviews, S&H procedures, program assessments, inspections and surveillances, overseeing the development of S&H training programs and contractor S&H programs, accident investigations, and managing the federal employee Occupational S&H program. The Occupational S&H function will provide job safety analysis, employee information and training, underground construction safety, occurrence reporting	of identifying changes to applicable environmental laws and regulations; obtaining and maintaining necessary permits to construct and operate; hazardous materials and solid waste management; environmental compliance self appraisals, audits, and surveillances; and preparation and maintenance of YMP environmental plans, administrative procedures and other documents, and preparation of annual site environmental reports as required by DOE Order 5400.1. The Safety and Health (S&H) compliance program provide engineering design reviews, S&H procedures, program assessments, inspections and surveillances, overseeing the development of S&H training programs and contractor S&H programs, accident investigations, and managing the federal employee Occupational S&H program. The Occupational S&H function will provide job safety analysis, employee information and training, underground	ownership and control. ($ 500) MANAGEMENT & COMPLIANCE: In support of the Management & Compliance product, environmental compliance program activities will consist of identifying changes to applicable environmental laws and regulations; obtaining and maintaining necessary permits to construct and operate; hazardous materials and solid waste management; environmental compliance self appraisals, audits, and surveillances; and preparation and maintenance of YMP environmental plans, administrative procedures and other documents, and preparation of annual site environmental reports as required by DOE Order 5400.1. The Safety and Health (S&H) compliance program provide engineering design reviews, S&H procedures, program assessments, inspections and surveillances, overseeing the development of S&H training programs and

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Environment, Safety, and Health (Cont'd)	monitoring, surveying and corrective action plans for deficiencies detected. Continued GERT, first aid/CPR, defensive driving, general underground training for miners, and other required safety and health courses. Reviewed all project work activities and site design of structures, ESF, and equipment to ensure compliance with applicable standards. Performed inspections, surveillances, surveys, and appraisals to meet this requirement. Implemented OCRWM 5-year safety and health plan. Expanded functions of safety and health program to support increased site construction and other activities.	initiate transportation risk analysis. Perform M&TE and QA liaison interface functions. SAFETY AND HEALTH: Monitor all project work activities site design, ESF, and equipment to assure compliance with applicable standards. Perform S&H inspections, surveillances, surveys, and appraisals. Coordinate S&H programs with NTS, Federal OSHA, Nevada DOSH, and other agencies, as needed. Implement ES&H OCRWM 5-Year Management Plan. Expand S&H functions to support increased site construction activities and surface-based drilling. Provide fire protection, occupational S&H and medical services that meet minimum S&H requirements, including OSHA, MSHA, and DOE Orders.	and investigations, oversight of tunnel boring activities, industrial hygiene functions, and S&H self appraisals and assessments. ($ 11,116)	construction safety, occurrence reporting and investigations, oversight of tunnel boring activities, industrial hygiene functions, and S&H self appraisals and assessments. ($ 11,333)	contractor S&H programs, accident investigations, and managing the federal employee Occupational S&H program. The Occupational S&H function will provide job safety analysis, employee information and training, underground construction safety, occurrence reporting and investigations, oversight of tunnel boring activities, industrial hygiene functions, and S&H self appraisals and assessments. ($ 11,417)
	$ 13,973	$ 19,100	$ 30,000	$ 33,480	$ 30,500

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III. Yucca Mountain Site Characterization Project (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Institutional	Continued operation and updated exhibits in current three science centers in Nevada. Supported six YMP public update meetings. Continued speaker's bureau activities and exhibit showings. Supported YMP interactions with State of Nevada, public interest groups, Nevada business community, and local government agencies. Continued rural outreach program and interactions with affected counties, including transportation activities. Supported DOE/YMP media relations, including an ongoing information clipping service. Developed and updated various publications, models and exhibits. Continued development and implementation of educational programs. Continued advertising program to further YMP public education and match needs of outreach program in all affected counties.	Continue operation and update exhibits in three science centers in Nevada. Complete expansion of Las Vegas Science Center. Provide additional support for rural outreach program, speaker's bureau, and site tours, commensurate with increased site characterization. Increase support of YMP interactions with State of Nevada, public interest groups, Nevada business community, local government agencies, and other stakeholders. Continue rural outreach program and interactions with affected counties, including transportation activities. Support DOE/YMP media relations, including an ongoing information clipping service. Develop or acquire needed audiovisuals, publications, models, commercial print/ electronic media announcements, and exhibits. Continue development and implementation of K-12 educational programs and educational program interactions at the university and community college	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance (M&C) product, continue planning, coordination, integration, and conduct of Project interactions with the public and stakeholders in compliance with the Secretary of Energy's stakeholder policy. Rural outreach programs and interactions with affected countries will be conducted, including support of transportation studies. Public outreach will be performed through educational programs, a speaker's bureau, site tours, awareness enhancement program, release of Yucca Mountain Site Characterization Project information to external parties, and operation and update of exhibits in three science centers. Audiovisuals, publications, models, commercial print/ electronic media announcements, and exhibits will either be developed or acquired.	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance (M&C) product, continue planning, coordination, integration, and conduct of Project interactions with the public and stakeholders in compliance with the Secretary of Energy's stakeholder policy. Rural outreach programs and interactions with affected countries will be conducted, including support of transportation studies. Public outreach will be performed through educational programs, a speaker's bureau, site tours, awareness enhancement program, release of Yucca Mountain Site Characterization Project information to external parties, and operation and update of exhibits in three science centers. Audiovisuals, publications, models, commercial print/ electronic media announcements, and exhibits will either be developed or acquired.	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance (M&C) product, continue planning, coordination, integration, and conduct of Project interactions with the public and stakeholders in compliance with the Secretary of Energy's stakeholder policy. Rural outreach programs and interactions with affected countries will be conducted, including support of transportation studies. Public outreach will be performed through educational programs, a speaker's bureau, site tours, awareness enhancement program, release of Yucca Mountain Site Characterization Project information to external parties, and operation and update of exhibits in three science centers. Audiovisuals, publications, models, commercial print/ electronic media announcements, and exhibits will either be developed or acquired.

III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Institutional (Cont'd)		level. Continue awareness enhancement program to further YMP public education and match needs of outreach programs. Add contracts staff to support increased stakeholder involvement in Nevada, growing county representative program, and rapidly expanding education programs. Identify, evaluate and facilitate resolution of transportation-related issues and concerns. Plan and coordinate integration of outreach and institutional concerns into technical planning and management process.			
	$ 3,989	$ 4,500	$ 5,000	$ 5,500	$ 6,000
Support Services	Continued to provide administrative support, including procurement, contract management, legal services, personnel, and clerical support for YMP, mail distribution, and logistical support for offsite participants. Continued to provide facility/equipment management support such as YMP technical library operations, NVO visitors centers, facility management,	Provide administrative support, including procurement, contract management, legal services, personnel, and clerical support for YMP, mail distribution, and logistical support for offsite participants. Continue to provide facility/equipment management support such as YMP technical library operations, NVO visitors centers, facility management,	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance (M&C) product, continue to provide administrative/ support service, including procurement, contract management, legal services, personnel/clerical support, mail distribution, logistical support for offsite participants,	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance (M&C) product, continue to provide administrative/ support service, including procurement, contract management, legal services, personnel/clerical support, mail distribution, logistical support for offsite participants,	MANAGEMENT & COMPLIANCE: In support of the Management and Compliance (M&C) product, continue to provide administrative/ support service, including procurement, contract management, legal services, personnel/clerical support, mail distribution, logistical support for offsite participants,

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Support Services (Cont'd)	property management, rent and telephone services at YMP, security services, office equipment rental and lease, and motor pool operations. Continued to provide publication/graphics services such as printing, graphics, reproduction, publication services, word processing, editing, technical writing, photo and videotape services. Provided overall management of training program. Developed systematic approaches to training to satisfy NRC and OCRWM requirements. Conducted training for instructor qualification, orientation, indoctrination. Maintained personnel training records. Developed and maintained training baseline and project-related procedures.	property management, rent and telephone services at YMP, security services, office equipment rental and lease, and motor pool operations. Continue to provide publication/graphics services such as printing, graphics, reproduction, publication services, word processing, editing, technical writing, photo and videotape services. Provide overall management of training program. Continue to develop systematic approaches to training to satisfy NRC and OCRWM requirements. Satisfy requests for all field activity training requirements. Conduct training for instructor qualification, orientation, and indoctrination. Maintain personnel training records. Develop and maintain training baseline and project-related procedures. Increase administrative contractor staff, and support services, commensurate with site characterization activities. Review facility designs for safeguards and security	facility/equipment management, review of facility designs for safeguards and security compliance, facility/ property management, facilities rent and telephone services, office equipment lease/rental, motor pool operations and publications/graphics services. Provide overall management of training program. Maintain systematic approaches to training. Purchase motor vehicles as required.	facility/equipment management, review of facility designs for safeguards and security compliance, facility/ property management, facilities rent and telephone services, office equipment lease/rental, motor pool operations and publications/graphics services. Provide overall management of training program. Maintain systematic approaches to training. Increase field and underground training commensurate with increased site characterization activities. Purchase motor vehicles as required.	facility/equipment management, review of facility designs for safeguards and security compliance, facility/ property management, facilities rent and telephone services, office equipment lease/rental, motor pool operations and publications/graphics services. Provide overall management of training program. Maintain systematic approaches to training. Purchase motor vehicles as required.

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III. Yucca Mountain Site Characterization Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Support Services (Cont'd)		compliance.			
	$ 19,665	$ 28,988	$ 27,383	$ 32,189	$ 34,020
Yucca Mountain Site Characterization Project	$ 259,509	$ 375,270	$ 472,101	$ 533,144	$ 531,108

IV. A. Operating Expense Funded Subproject Summary

Subproject No.	Subproject Title	Previous Obligations	FY 1995 Appropriated	FY 1996	Unappropriated Balance	TEC
83-W-100	Exploratory Studies Facility	$ 118,194	$ 88,324	$ 84,550	$ 207,650	$ 498,918

IV. B. Operating Expense Funded Subproject Descriptive Summary
1. Project Title and Location: Subproject 83-W-100, Exploratory Studies Facility (ESF), Yucca Mountain, Nye County, Nevada

TEC: ~~$593,634~~ $498,918
TPC: ~~$917,170~~ $753,121

Physical Construction Start Date: 1st Qtr FY 1993 Completion Date: ~~4th Qtr FY 2000/a~~ 2nd Qtr. FY 2000

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	$ 117,442	+ 1,141 c/	$ 118,583	$ 118,583
1993	48,820	-647 d/	48,173	32,539
1994	56,400	-500 d/	64,084	64,828
1995	99,901	- -	99,901	87,101
1996	102,200	- -	102,200	111,569
1997	103,000	- -	103,000	103,800
1998	81,600	- -	81,600	93,444
1999 - 2001		- -	138,616	147,293

a/ TPC is the current cost baseline approved by the Energy System Acquisition Advisory Board (ESAAB) in January, 1992, for the total Yucca Mountain Site Characterization Project work scope, which consists primarily of non-construction work for scientific investigations and License Application development.

b/ TEC has decreased $94,716,000 as a result of dropping the Optional Shaft from the program, and decreasing the length of exploratory drifting at the Topopah Spring Level. The TPC has decreased $164,051,000 due to reduced construction requirements under the Program Approach.

c/ Reflects use of prior-year balances during FY 1992 to support the completion of that portion of Title II design required for the start of site preparation in the first quarter of FY 1993, for the first access ramp portal.

d/ Budget authority transferred to other YMP program elements to fund ESF regulatory, repository/ESF interfaces and system studies, occupation and mined safety and health training.

3. Narrative: ~~The FY 1994 Congressional budget submission identified a total estimated cost (TEC) of $593,193,000 in year-of-expenditure dollars for this subproject. Technical changes from the FY 1994 Congressional budget submission include a shortening of the architect-engineer work schedule duration from 117 months and the construction schedule duration from 93 months to 85 months. Both changes are attributable to an expected increase in funding in FY 1995, which would allow earlier completion of engineering design and inspection, and construction.~~ The FY 1995 Congressional budget submission identified a total estimated cost (TEC) of $593,634,000 in year-of-expenditure dollars for this subproject. Technical changes from the FY 1995 Congressional budget submission include a rebaselining (in mid- to late-FY 1995) of the Yucca Mountain Site Characterization Project to the Program Approach (PA). The PA will seek to focus the site characterization program on those tests and analyses most critical to suitability evaluation in order to issue a Technical Site Suitability Evaluation in Fiscal Year 1998 (versus Fiscal Year 2001 as scheduled in the program approved in 1989). As a result of the PA, Calico Hills access design and excavation are to be rescheduled to FY 1998 (design) and to FY 1998 through the 2nd quarter of FY 2000 (construction). This increases the architect-engineer work schedule to 132 months from 105 months and the construction schedule to 90 months from 85 months.

~~The Exploratory Studies Facility will consist of two 25-foot inside diameter sloping ramps to the Topopah Spring Level (TSL), with side ramps of 18-foot inside diameter continuing down to the Calico Hills Level (CHL). It will be constructed by tunnel boring machines (TBM). When completed, the ramps will be capable of transporting personnel and materials to the test and potential repository horizons. The underground lateral drifts will include service and main test areas (MTA) and exploratory drifts, which will allow for a wide range of in-situ geologic, geochemical, geomechanical, hydrologic, and thermal tests in the geologic horizon.~~ The facility will consist of two 7.62 meter diameter sloping ramps to the Topopah Spring level (TSL). It will be constructed by a tunnel boring machine (TBM). When completed, the ramps will be capable of transporting

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IV. B. Operating Expense Funded Subproject Descriptive Summary
1. Project Title and Location: Subproject 83-W-100, Exploratory Studies Facility (ESF), Yucca Mountain, Nye County, Nevada

TEC: ~~$503,634~~ $498,918
TPC: ~~$937,173~~ $753,121

3. Narrative (continued)

personnel and materials to the test and potential repository horizons. The underground lateral drifts will include service and test areas and exploratory drifts, which will allow for a wide range of in-situ geologic, geochemical, geomechanical, hydrologic, and thermal tests in the geologic horizon. The Calico Hills Level will be accessed using the 5.5 meter TBM.

The primary objective of this subproject is to collect and analyze data to be used in determining the suitability of the Yucca Mountain candidate site for the construction of a potential high-level nuclear waste repository. Construction, as defined in the Exploratory Studies Facility Design Requirements Document, will: (1) provide access to selected underground tuff horizons and surrounding strata in an unsaturated zone and perform in-situ testing in the selected horizons at the Yucca Mountain candidate site, and (2) provide the ability to safely and effectively acquire the necessary data for design of a potential repository, performance assessment, and license application.

The Exploratory Studies (ES) program will contribute to scientific investigation through extensive in-situ testing. This testing will assess geologic characteristics and characteristic variables; analyze the hydrologic properties to aid in evaluation of the isolation capability of the candidate tuff horizon; and determine whether the stability of openings can be maintained throughout the operational life of the potential repository without adversely affecting isolation capability or retrievability. At the conclusion of the ES program, and through the use of data obtained in other Yucca Mountain site investigation activities, data will be available to assess the suitability of the tuff on the site for use as a nuclear waste repository.

~~The budget authority level requested for FY 1995 will provide support to continue tunnel boring operations along north ramp and into main TSL drift. Complete design for TSL main drift, start design for MTS, complete design for north ramp extension drift, start and complete design for south ramp, south portal pad and south portal access road, complete design for north portal facilities, continue design for IDS, and initiate procurement for Integrated Data System (IDS) components. Complete construct of utility systems for north portal pad, procure and construct change house/portal control building, and crafts shop. Procure 5.5 meter (18 foot) TBM and mobile miner for alcove excavation. Complete design and construction to upgrade 69 kV power system form 10 MVA to 20 MVA capacity. Construct muck handling conveyor systems and construct first segment of muck storage area. Extend north portal pad and construct north portal headwall. Excavate second test alcove located in north ramp at Bow Ridge Fault and commence testing. Continue test planning, coordination and construction test support. Provide for ongoing Title III engineering design and inspection support to construction. Provide for overall project architect engineering, construction management, operation and maintenance of ESF equipment and facilities.~~ The budget authority level requested for FY 1996 will provide support to: complete TBM operations along the north ramp and the TSL main drift; begin excavation of a heater test area in support of thermal testing; start construction of the south portal pad and access road; construct surface facilities and associated buried utilities at the north portal pad; complete design of the south portal utilities and facilities; complete design of a TSL heater test area and test alcoves; continue IDCS procurements and installation; continue test planning, coordination and construction test support; provide on-going Title III engineering support to construction; provide overall project engineering, construction management and test support; and operate and maintain ESF equipment and facilities.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
(DOLLARS IN THOUSANDS)

WASTE ACCEPTANCE, STORAGE, AND TRANSPORTATION

BUDGET ELEMENT	FY 1994 APPROP.	FY 1995 APPROP.	FY 1996 REQUEST	FY 1997 REQUEST	FY 1998 REQUEST
MONITORED RETRIEVABLE STORAGE **	14,541	27,400	27,400	42,900	102,042
TRANSPORTATION SYSTEM	14,209	23,600	26,600	16,375	17,450
WASTE ACCEPTANCE	3,116	6,000	7,600	10,000	14,000
TOTAL - WASTE ACCEPTANCE, STORAGE, & TRANSPORTATION	31,866	57,000	61,600	69,275	133,492

** FY 1998 includes contingency funding of $47.1 million for interim storage activities, which assumes passage of a legislative proposal.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR WASTE DISPOSAL ACTIVITIES

I. Preface: Monitored Retrievable Storage

In compliance with Secretarial guidance, this decision unit supports continuing the development of the Multi-Purpose Canister (MPC) system, including the design and certification through the Nuclear Regulatory Commission (NRC). This unit provides funds for the preparation of necessary environmental documentation that must be in place prior to a decision to start of fabrication of MPC units beginning in the third quarter of FY 1997 and for the fabrication of MPC units for near-term on-site storage. The decision unit supports development of MPCs for near-term storage of spent nuclear fuel, as necessary, prior to transfer to a pre-disposal storage site or a geologic repository.

The MPC system is an integral part of the Federal waste management system. The MPC system provides standardization, flexibility and reliability, and reduces the handling of spent nuclear fuel by providing compatibility between on-site storage and the Federal Waste Management System. The MPC system can integrate the Federal waste management system with interim storage of spent nuclear fuel at reactor sites.

The FY 1996 Congressional budget request supports deliveries of MPCs to support waste acceptance receipt at the rate of 400 metric tons of uranium (MTUs) in CY 1998, 600 MTUs in CY 1999, and 900 MTUs in CY 2000. No funds are included for Monitored Retrievable Storage (MRS) facility design or operational activities. The budget request is based on the following assumptions:

- The decision to proceed into NRC certification phase is made in FY 1996.
- The MPC system is utilized by those utilities that require dry storage.
- The Environmental Impact Statement for the MPC system will result in a Record of Decision that will support the fabrication and deployment of MPCs.
- More than one award is made to contractors for the MPC design and obtaining NRC certification.

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II. A. Summary Table: Monitored Retrievable Storage

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
System Engineering	$1,218	$900	$600	($300)	$900	$900
Site Investigations	339	200	0	-200	0	0
MRS Facility	0	0	0	0	0	0
Regulatory	518	2,000	900	-1,100	1,400	1,300
Engineering Development	6,556	15,700	20,500	4,800	35,300	96,442 *
Project Management	1,203	3,200	1,800	-1,400	2,500	2,500
Financial Assistance	2,690	0	0	0	0	0
Quality Assurance	259	500	300	-200	400	200
Information Management	80	200	0	-200	0	0
Environmental, Safety & Health	857	3,900	2,800	-1,100	1,800	300
Institutional	732	600	500	-100	600	400
Support Services	89	200	0	-200	0	0
Total, Monitored Retrievable Storage	$14,541	$27,400	$27,400	$0	$42,900	$102,042

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II. B. Laboratory and Facility Funding Table: Monitored Retrievable Storage

Idaho Operations Office	$2,490	$3,130	$3,130	$0	$3,130	$3,130
Argonne National Laboratory	500	2,800	3,200	$400	800	0
Washington Headquarters	11,551	21,470	21,070	-400	38,970	98,912
Total, Monitored Retrievable Storage	$14,541	$27,400	$27,400	$0	$42,900	$102,042

*Note: Contingency funding of $47.1 million is included for interim storage activities, which assumes passage of a legislative proposal.

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Monitored Retrievable Storage					
Systems Engineering	Updated and implemented the Project System Engineering Management Plan (SEMP) focusing on Multi-Purpose Canisters (MPCs). Developed draft appendices to SEMP. Established traceability in the Design Requirements Document (DRD), Interface Control Documents (ICDs) and Test & Evaluation Master Plan (T&EMP). Support project Configuration Management (CM) activities.	Maintain the WAST Project System Engineering Management Plan (SEMP) and complete some of its appendices. Support program and project management and technical reviews. Maintain Multi-Purpose Canister (MPC) System Design Requirements Documents (DRDs) and their traceability to the System Requirements Documents (SRDs). Support completion/revision of MPC-related Program Interface Control Documents (ICDs). Provide WAST Project support/review for updates to the program-level technical and management baseline documentation. Support MPC System proposal evaluations. Monitor and review MPC System design vendors' design activities and products to evaluate MPC System design conformance with, and traceability to, the MPC System DRDs. Review/evaluate MPC System design vendors' verification plans. Monitor, review, and	PROJECT MANAGEMENT & INTEGRATION: Maintain the WAST Project System Engineering Management Plan (SEMP) and complete or update appendices as applicable. Support program and project management and technical reviews. Maintain Multi-Purpose Canister (MPC) System Design Requirements Documents (DRDs) and their traceability to the System Requirements Documents (SRDs). Begin development of MPC-related element-level Interface Control Documents (ICDs) and support revision of Program ICDs. Provide WAST Project support/review for updates to the program-level technical and management baseline documentation. Complete the final draft MPC-focused Project Test & Evaluation Master Plan (T&EMP). Monitor and review MPC System design vendor(s)' design	PROJECT MANAGEMENT & INTEGRATION: Maintain the WAST Project SEMP. Update MPC DRDs to reflect MPC System Part 71 and 72 SARs, MGDS Thermal Loading requirements), and MPC, MPC Transportation Cask (TC), and On-Site Transfer and Storage System (OSTS) Final Designs (completed in FY-97). Develop and maintain MPC-related element-level ICDs and support maintenance of Program ICDs. Support program and project management and technical reviews. Support EIS development, NRC Part 71 and Part 72 Reviews, the FY-97 ESAAB and decision to exercise options to fabricate MPCs, and the development of the RFP for FY-99 follow-on MPC fabrication. Conduct, coordinate, and support system and life cycle cost studies and related modeling activities as required. Update WAST Project Test and Evaluation	PROJECT MANAGEMENT & INTEGRATION: Maintain the WAST Project SEMP. Update MPC System DRDs to reflect MPC, MPC TC, and OSTS Final Designs. Maintain MPC-related element-level ICDs and support maintenance of Program ICDs. Support program and project management and technical reviews. Provide support/review for updates to the program-level technical and management baseline documentation. Support Part 72 Review and the development and issuance of the RFP for FY-99 follow-on MPC fabrication, and the decision to Start MPC Deployment. Conduct, coordinate, and support system and life cycle cost studies and related modeling activities as required. Update WAST Project TEP as required to reflect acceptance testing. Maintain traceability between MPC as-built documentation and the DRDs. Monitor and evaluate MPC System

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III Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Engineering (Cont'd)		support design vendors' test planning. Perform and coordinate Project Configuration Management (CM) activities, maintain CM Plan, support Program CM activities, evaluate design vendor CM plans, and monitor and support vendor CM activities. Conduct and support system studies and life cycle cost analyses.	activities and products to evaluate MPC System design conformance with, and traceability to, the MPC System DRDs. Review/evaluate MPC System design vendor(s)' verification plans. Monitor, review, and support design vendor(s)' test planning, fabrication, and test readiness reviews. Perform and coordinate Project Configuration Management (CM) activities, maintain CM Plan, support Program CM activities, evaluate design vendor CM plans, and monitor and support vendor CM activities and maintain Project Q-List for configuration items and activities important to safety.	Plan (TEP) to reflect MPC System vendor prototype testing to be performed in FY-97 and FY-98. Monitor and evaluate MPC System vendor(s)' MPC, MPC TC, and OSTS Prototype Fabrication, testing, conformance verification and products. Establish and maintain traceability between MPC System Final Designs and the DRDs. Conduct MPC-related Functional Configuration Audits (FCAs) and Formal Qualification Reviews (FQRs) necessary to support FY-97 ESAAB decision to Exercise Option to fabricate MPCs. Develop plans for Physical Configuration Audits (PCAs) to support acceptance of MPCs for FY-98 MPC Deployment. Perform and coordinate Project CM activities, baseline MPC system design documentation, maintain CM Plan, support Program CM activities, and monitor, evaluate, and support vendor CM activities. Update the CI Architecture, Q-List, and MRS Specification Tree to reflect MPC System	vendor(s)' MPC TC Prototype testing and conformance verification activities. Conduct MPC TC-related FCAs, FQRs, and MPC-related Conduct PCAs to support acceptance of MPCs for FY-98 MPC Deployment. Perform and coordinate Project CM activities, baseline MPC system design documentation, maintain CM Plan, support Program CM activities, and monitor, evaluate, and support vendor CM activities. Update the CI Architecture, Project Q-List, and Specification Tree to reflect the as-built MPC System.

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III Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Engineering (Cont'd)				design as contained in the SARs and Final Designs.	
	$ 1,218	$ 900	$ 600	$ 900	$ 900
Site Investigations	Investigated Federal sites specified by DOE management. Provided support to the Negotiator.	Develop a white paper describing options/plans for siting an interim storage facility and addressing/resolving interim storage issues after the term of the Office of the Nuclear Waste Negotiator ends.	PROJECT MANAGEMENT & INTEGRATION: No activity.	PROJECT MANAGEMENT & INTEGRATION: No activity.	PROJECT MANAGEMENT & INTEGRATION: No activity.
	$ 339	$ 200	$ 0	$ 0	$ 0
MRS Facility	No activity.	No activity.	No activity.	No activity	No activity
	$ 0	$ 0	$ 0	$ 0	$ 0
Regulatory	Developed Burn-up Credit Topical Report and responded to NRC review comments. Continued Nuclear Regulatory Commission (NRC) pre-licensing interactions. Continued other agency interactions including interactions with utilities and spent nuclear fuel (SNF) storage/transportation cask vendors. Performed regulatory reviews of Multi-Purpose Canister (MPC) design documents to ensure licensability and compliance with Office of Civilian	Develop Burn-up Credit Topical Report and respond to NRC review comments. Continue to evaluate vendor(s) proposals on Multi-Purpose Canisters (MPCs) for licensability. Monitor vendor(s) MPC pre-licensing interactions with the Nuclear Regulatory Commission (NRC). Develop Topical Reports and respond to NRC review comments. Continue NRC interactions. Continue other agency/industry interactions. Continue	TRANSPORTATION: Continue development of Burn-up Credit Topical Report and respond to NRC review comments. MPC SUBSYSTEM: Continue to evaluate vendor-developed Safety Analysis Reports (SARs) for Multi-Purpose Canister (MPC) licensability. Continue to monitor vendor MPC licensing activities. Continue MPC issue resolution activities. Develop	TRANSPORTATION: Provide review, analysis, and comments on draft or final legislation and provide continued support to burn-up credit activities. MPC SUBSYSTEM: Continue NRC interactions. Follow the certification and licensing activities associated with the MPC. Support implementation of the MPC system. Continue NRC Issue Resolution	TRANSPORTATION Provide review, analysis, and comments on draft or final legislation and provide continued support to burn-up credit activities. MPC SUBSYSTEM: Continue NRC interactions associated with amendments to the MPC Certificates of Compliance. Continue regulatory reviews and tracking of utility ISFSI applications and compatibility with the

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III Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory (Cont'd)	Radioactive Waste Management (OCRWM) program/project regulatory requirements. Developed topical reports and proposed rule makings to facilitate MPC implementation. Identified and resolved MPC licensing issues that impact other Program elements.	review of regulatory documents. Continue MPC issue resolution activities.	Topical Reports and proposed rule makings. Continue Nuclear Regulatory Commission (NRC) interactions. Continue reviews of regulatory documents. Continue other agency/industry interactions. Develop a Regulatory Compliance Plan (RCP) for MPCs.	activities. Continue regulatory reviews. Continue other agency/industry interactions. Prepare Topical Reports or Proposed Rulemakings to support the implementation of the MPC System.	MPC. Continue NRC Issue Resolution activities associated with open issues. Continue other agency/industry interactions. Prepare Topical Reports or Proposed Rulemakings as required.
	$ 518	$ 2,000	$ 900	$ 1,400	$ 1,300
Engineering Development	For Multi-Purpose Canister (MPC) design, completed conceptual design, issued request for proposals (RFP) and revised and updated the Monitored Retrievable Storage (MRS) Conceptual Design to include the utilization of the MPC system. Initiated detailed design (via vendor) for the MPC system (canister, overpacks, and utility transfer system). Provided design input to necessary regulatory documents, such as the Environmental Assessment (EA) and Safety Analysis Report (SAR), and the topical SAR (TSAR) for the MPC and storage overpack. For Dry Rod	For Multi-Purpose Canister (MPC), evaluate vendor proposals and award contracts for Safety Analysis Report (SAR) design of MPC/ Transportation Cask/Storage Mode. Begin SAR design of MPC system. Support DOE/industry development of a dry spent fuel transfer system. For Dry Rod Consolidated Technology Disposition (DRCTD) Project, procure final shipment of transport containers. Pack containers and transfer to disposal area. Close out project. For Spent Fuel Behavior in Long-Term Storage	MPC SUBSYSTEM: For Multi-Purpose Canister (MPC), complete Safety Analysis Report (SAR) design of MPC and support Nuclear Regulatory Commission (NRC) Part 71 Review. Perform down selection of vendor(s) prior to licensing. Perform topical SAR (TSAR) design of storage mode and issue to NRC for Part 72 Review. Begin Prototype FAB/Test MPC. Support DOE/industry development of a dry spent fuel transfer system. PROJECT MANAGEMENT & INTEGRATION: For Dry Rod Consolidation	MPC SUBSYSTEM: Continue supporting the Nuclear Regulatory Commission's (NRC) part 71 review of the MPC, part 72 review of the storage mode and review of Bare Spent Nuclear Fuel System SAR. Receive NRC SER and COC for MPC and draft SER and COC for Storage mode. Complete fabrication and testing the MPC System prototypes. Begin preparing RFP for outyear MPC fabrication proposals. Exercise Fabrication Option for fabrication of MPCs for first two years. Begin fabrication of initial canisters. Support DOE/industry development of a dry spent fuel transfer	MPC SUBSYSTEM: Begin deployment of MPCs. Issue RFP for outyear MPC fabrication and evaluate fabrication proposals. Provide technical support to vendors through initial fabrication. Complete fabrication of MPCs for first two year contract. Fabricate and test BST prototype. Support DOE/industry development of a dry spent fuel transfer system. PROJECT MANAGEMENT & INTEGRATION: For Nuclear Fuel Services (NFS) Project, complete fuel management option.

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III. Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Engineering Development (Cont'd)	Consolidated Technology Disposition (DRCTD) Project, completed on-site fabrication and container procurement. Performed dry run and readiness review. Began packaging containers for transfer to disposal areas. For Spent Fuel Behavior in Long-Term Storage Project, prepared sampling plan, safety and environmental documents. Collected initial gas samples for analysis. For Nuclear Fuel Services (NFS) Project, recertified one Transnuclear (TN) cask. Select fuel storage options. Continued monitoring fuel in pool storage.	Project, prepare engineering evaluation of the gas samples, fuel inspection readiness review, complete quarterly gas samples and annual project report. For Nuclear Fuel Services (NFS) Project, continue monitoring fuel in pool storage. Pay penalty to New York State. Recertify second Transnuclear (TN) cask. Implement Spent Fuel Management Option.	Technology Disposition (DRCTD) Project, Store NFBCs if project completion in FY 1995 is delayed. Spent Fuel Behavior in Long-Term Storage Project is transferred to Civilian Radioactive Waste Management Long-Term Storage and Monitoring Program. Provide for NWF M&O technical information exchanges with INEL and PNL. For Nuclear Fuel Services (NFS) Project, continue monitoring fuel in pool storage. Continue to implement fuel management option. Pay penalty to New York State. Identify Potential requirement for Multi-Purpose Canister (MPC) use in existing Demonstration Project. Initiate INEL Test Area North Hot Shop support for potential NFS spent fuel shipment and hot performance tests of the dry spent fuel transfer system and/or MPC prototypes.	system.	CONTINGENCY FUNDING: Contingency funding of $47.1 million is included for interim storage activities, which assumes passage of a legislative proposal.
	$ 6,556	$ 15,700	$ 20,500	$ 35,300	$ 96,442

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III. Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Project Management	Maintained and updated the cost and schedule baselines and other project-level documents. Continued to perform administrative, and contractual management. Maintained project control system for Monitored Retrievable Storage (MRS) Project Major Systems Acquisition (MSA). Developed the Office of Storage and Transportation (OST) Annual Plan. Supported development of the RFP for Multi-Purpose Canister (MPC) system acquisition. Provided engineering and management support.	Maintain and update project cost and schedule baselines. Perform administrative, and contractual management. Develop presentations for bi-monthly Director's Program Reviews. Maintain project control system for Waste Acceptance, Storage and Transportation (WAST) Project. Develop the OWAST Annual Plan. Support DOE/industry development of a dry spent fuel transfer system. Provide general engineering and management support.	PROJECT MANAGEMENT & INTEGRATION: Maintain and update project cost and schedule baselines. Continue to perform administrative and contractual management. Maintain project control system for WAST Project. Support and integrate the Internal Review Budget (IRB) and project validation processes. Develop the OWAST Annual Plan.	MPC SUBSYSTEM: Continue supporting the Nuclear Regulatory Commission's (NRC) part 71 review of the MPC, part 72 review of the storage mode and review of Bare Spent Nuclear Fuel System SAR. Receive NRC SER and COC for MPC and draft SER and COC for Storage mode. Complete fabrication and testing the MPC System prototypes. Begin preparing RFP for outyear MPC fabrication proposals. Exercise Fabrication Option for fabrication of MPCs for first two years. Begin fabrication of initial canisters. Support DOE/industry development of a dry spent fuel transfer system. PROJECT MANAGEMENT & INTEGRATION: Maintain and update project cost and schedule baselines. Continue to perform administrative and contractual management. Maintain project control system for WAST Project. Support and integrate the IRB and project validation processes. Develop the	PROJECT MANAGEMENT & INTEGRATION: Maintain and update project cost and schedule baselines. Continue to perform administrative and contractual management. Maintain project control system for the WAST Project. Support and integrate the IRB and project validation processes. Develop the OWAST Annual Plan. Plan for and produce documentation for the ESAAB (KD-4) to insure an affirmative decision to deploy the MPCs.

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III Monitored Retrievable Storage (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Project Management (Cont'd)				OWAST Annual Plan. Plan for and produce documentation for the ESAAB (KD-3) to insure an affirmative decision to proceed with the MPC fabrication.	
	$ 1,203	$ 3,200	$ 1,800	$ 2,500	$ 2,500
Financial Assistance	Funded and administered financial assistance as appropriate.	No activity.	No activity.	No activity.	No activity.
	$ 2,690	$ 0	$ 0	$ 0	$ 0
Quality Assurance	Supported Quality Assurance (QA) activities for design of Multi-Purpose Canister (MPC) and storage overpack and start of Safety Analysis Report (SAR) design. Maintained QA program, plans and procedures, including personnel training and qualification audits.	Assure that quality-affecting activities and products relating to Multi-Purpose Canisters (MPCs), storage modes, and cask-to-cask transfer systems are performed and developed in accordance with Office of Civilian Radioactive Waste Management (OCRWM) and Management and Operating (M&O) contractor Quality Assurance (QA) programs. Monitor vendor activities including audits and surveillance of vendor QA programs and activities.	PROJECT MANAGEMENT & INTEGRATION: Assure that the final design, prototype fabrication, and prototype testing is performed in accordance with the Office of Civilian Radioactive Waste Management (OCRWM) and Management and Operating (M&O) Quality Assurance (QA) programs by monitoring the M&O and vendor activities through audits and surveillances.	PROJECT MANAGEMENT & INTEGRATION: Assure that the MPC and MPC transportation cask testing activities and MPC fabrication contract preparation and award activities are performed in accordance with the QARD requirements through support of the activities and through audits and surveillances.	PROJECT MANAGEMENT & INTEGRATION: Assure that the MPC fabrication activities and testing activities are performed in accordance with the QARD requirements through support of the activities and through audits and surveillances.
	$ 259	$ 500	$ 300	$ 400	$ 200

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III. Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management	Completed input to InfoSTREAMS systems to support storage and retrieval of planning documents, licensing, regulatory and technical information needs.	Acquire, maintain and support computer hardware and software for MPC design and system activities.	No activity.	No activity.	No activity.
	$ 80	$ 200	$ 0	$ 0	$ 0
Environment, Safety, and Health	Prepared MPC EIS notice of intent. Prepared documents, plans, schedules supporting EIS projects. Provided oversight for environment, safety and health (ES&H) efforts associated with Monitored Retrievable Storage (MRS) Project Major Systems Acquisition (MSA). Provided updates of ES&H Five-Year Plan.	Hold 2-3 national scoping meetings. Issue Environmental Impact Statement (EIS) Implementation Plan. Prepare draft EIS (DEIS). Continue to provide oversight for environment, safety and health (ES&H) efforts associated with the Waste Acceptance, Storage and Transportation (WAST) Project. Provide updates of ES&H Five-Year Plan.	MPC SUBSYSTEM: Issue draft Environmental Impact Statement (DEIS). Hold public hearings on DEIS. Review and incorporate responses to public comments into final EIS (FEIS) and prepare Comment Response Document. Complete and submit Multi-Purpose Canister (MPC) environmental report to the Nuclear Regulatory Commission. PROJECT MANAGEMENT & INTEGRATION: Continue to provide oversight for environment, safety and health (ES&H) efforts associated with MPC system development. Provide updates of ES&H Five-Year Plan.	MPC SUBSYSTEM: Complete and issue FEIS and CRD. Prepare and issue Record of Decision. Respond to Congressional, stakeholder, public, and other inquiries on FEIS and ROD. PROJECT MANAGEMENT & INTEGRATION: Continue to provide oversight for environment, safety and health (ES&H) efforts associated with MPC system development. Provide updates of ES&H Five-Year Plan.	MPC SUBSYSTEM: Support MPC deployment in the area of EIS-related questions and concerns. PROJECT MANAGEMENT & INTEGRATION: Continue to provide oversight for environment, safety and health (ES&H) efforts associated with MPC system development. Provide updates of ES&H Five-Year Plan.
	$ 857	$ 3,900	$ 2,800	$ 1,800	$ 300

III. Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Institutional	Provided communication, outreach and socioeconomic programs. Activities include integrated stakeholder involvement in development of Multi-Purpose Canister (MPC) system, supporting siting initiatives, and developing public information materials.	Integrate stakeholder involvement and input into Multi-Purpose Canister (MPC) system development. Support Environmental Impact Statement (EIS) scoping and meetings. Activities include organizing/facilitating stakeholder meetings, developing presentation materials and responding to stakeholder questions. Support WAST siting initiatives.	TRANSPORTATION: Maintain a program of stakeholder involvement in plans for implementing the MPC system. Includes one information meeting for technical stakeholders. Provide communications support for the EIS process, including hearings on the DEIS and other public information meetings; staff the MPC exhibit as requested. Communication and public information responsibilities include updating, developing, and producing public information materials. Prepare OCRWM briefings and related materials for internal and external audiences. Maintain up-to-date graphics, models and related audio-visuals. Attend and report on meetings and conferences with topics related to institutional considerations for implementing the MPC system. Develop and deliver correspondence and answers to questions from the public, elected officials, media, and stakeholders as	TRANSPORTATION: Maintain a program of stakeholder involvement in plans for implementing the MPC system. Includes one information meeting for technical stakeholders following NRC review of the SAR. Communication and public information responsibilities include updating, developing, and producing public information materials. Prepare OCRWM briefings and related materials for internal and external audiences. Maintain up-to-date graphics, models and related audio-visuals. Attend and report on meetings and conferences with topics related to institutional considerations for implementing the MPC system. Develop articles on project progress for DOE publications and others as requested. Develop and deliver correspondence and answers to questions from the public, elected officials, media, and stakeholders as requested. Review and comment on program documents to identify	TRANSPORTATION: Maintain a program of stakeholder involvement in plans for implementing the MPC system. Includes one information meeting for stakeholders prior to MPC deployment. Communication and public information responsibilities include updating, developing, and producing public information materials. Prepare OCRWM briefings and related materials for internal and external audiences. Maintain up-to-date graphics, models and related audio-visuals. Attend and report on meetings and conferences with topics elated to institutional considerations for implementing the MPCsystem. Develop articles on project progress for DOE publications and others as requested. Develop and deliver correspondence and answers to questions from the public, elected officials, media, and stakeholders as requested. Review and comment on program documents to identify

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III. Monitored Retrievable Storage (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Institutional (Cont'd)			requested. Review and comment on program documents to identify potential institutional issues.	potential institutional issues.	potential institutional issues.
	$ 732	$ 600	$ 500	$ 600	$ 400
Support Services	Continued to provide administrative, and contractual activities at a level consistent with Multi-Purpose Canister (MPC) design activities.	Continue to provide administrative, and contractual activities at a level consistent with Multi-Purpose Canister (MPC) design activities.	No activity.	No activity.	No activity.
	$ 89	$ 200	$ 0	$ 0	$ 0
Monitored Retrievable Storage	$ 14,541	$ 27,400	$ 27,400	$ 42,900	$ 102,042

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KEY ACTIVITY SUMMARY

NUCLEAR WASTE DISPOSAL ACTIVITIES

I. Preface: Transportation System

The purpose of this decision unit is to ensure that a safe, environmentally acceptable, and cost-effective transportation capability is available and that an institutional environment is in place that will permit operation of the Federal high-level radioactive waste management transportation system in time to support the start of operation of a Federal receipt facility. Activities supported by this decision unit include providing for the design, development, certification, and testing of necessary transportation equipment and services utilizing the private sector to the fullest extent possible; identification and resolution of institutional issues; development of analytical processes and transportation information data bases to support overall program requirements (e.g., Environmental Impact Statement (EIS) support, design and interface control requirements, cost and schedule planning); and providing for the operational aspects of the shipment of spent fuel and high-level waste to storage and/or disposal facilities.

The FY 1996 Congressional budget request of $27.7 million provides for the basic design of a Transportation System and the design and certification of a legal-weight truck (LWT) and Multi-Purpose Canister (MPC) transportation cask systems by 1998. Major activities include: initiation of MPC transportation cask prototype design and certification; continuation of the LWT cask system design and certification; support of MPC EIS and deployment activities; continuation of Nuclear Waste Policy Act (NWPA) Section 180(c), routing, escort and other policy development activities; and continued operations planning and development of utility site plans. The budget request is based on the following assumptions:

- o There will be no fleet transportation of spent nuclear fuel (SNF) prior to Federal receipt at the repository.
- o Design/certification contracts for the MPC transportation casks will be in place in FY 1995.
- o No funding for Section 180(c) financial Assistance is provided during this planning horizon.

II. A. Summary Table: Transportation System

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
System Engineering	$811	$640	$500	($140)	$700	$700
Casks	8,126	16,500	20,500	4,000	8,700	8,700
Support Systems	1,803	1,840	900	-940	2,000	2,500
Regulatory	170	175	150	-25	175	200
Project Management	857	700	1,600	900	1,000	1,100
Financial Assistance	0	0	0	0	0	0
Quality Assurance	170	100	100	0	150	175
Information Management	30	25	50	25	50	75
Environmental, Safety & Health	279	1,320	600	-720	1,300	1,500
Institutional	1,918	2,300	2,200	-100	2,300	2,500
Support Services	45	0	0	0	0	0
Total, Transportation System	$14,209	$23,600	$26,600	$3,000	$16,375	$17,450

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Transportation System					
Systems Engineering	Maintained transportation data baseline and update Reference Transportation Data and Assumptions Report. Continued data requirement and acquisition activities in support of the Transportation Geographic Information System (TGIS) and prepared a TGIS manual. Developed plans for model development and acquisition. Determined impacts of various Multi-Purpose Canister (MPC) system parameters on transportation system cost, schedule and efficiency. Maintained transportation system baseline documents through configuration management system.	Maintain and update transportation database report. Continue data enhancement and acquisition activities in support of Transportation Geographic Information System (TGIS). Plan and initiate appropriate computer model development, acquisition and evaluation activities as related to a Multi-Purpose Canister (MPC)-based system. Perform analytical and trade-off study activities related to MPCs for updating and incorporating data into the revised RTDA design and operation. Determine impacts of various multi-purpose canister (MPC) system parameters on transportation system cost, schedule and efficiency. Perform transportation studies to support the waste acceptance process and to resolve system operations issues. Continue to maintain transportation technical baseline documents through configuration management.	PROJECT MANAGEMENT & INTEGRATION: Update Reference Transportation Data and Assumptions Report to include Multi-Purpose Canister (MPC) system design and operational parameters. Maintain transportation data baseline and add risk-based data associated with all modes of transportation considered by the Civilian Radioactive Waste Management System (CRWMS) program. Enhance Transportation Geographic Information System (TGIS) with rail and barge information to support MPC analyses. Implement planned model development, acquisition and evaluation in areas related to MPC. Update transportation system model requirements to include data obtained from the vendors. Perform analytical and trade-off studies related to transportation system design and operations addressing the deployment and use of MPCs and MPC	PROJECT MANAGEMENT & INTEGRATION: Update models and databases including the Reference Transportation Data and Assumptions Report to include Multi-Purpose Canister (MPC) system design and operational parameters. Maintain transportation data baseline and add risk-based data associated with all modes of transportation considered by the Civilian Radioactive Waste Management System (CRWMS) program. Complete incorporating rail and barge information for the MPC-based system into the Transportation Geographic Information System (TGIS). Implement planned model and data development, acquisition and evaluation in areas related to MPC. Perform analytical and trade-off studies related to transportation system design and operations addressing the deployment and use of MPCs and MPC transportation	PROJECT MANAGEMENT & INTEGRATION: Maintain transportation data baseline and add risk-based data associated with all modes of transportation considered by the Civilian Radioactive Waste Management System (CRWMS) program. Update Reference Transportation Data and Assumptions Report and other transportation system models to include final Multi-Purpose Canister (MPC) system design, risk and operational data from the designers based on NRC certified designs. Complete and release to the public Phase 1 of the Transportation Geographic Information System (TGIS). Implement planned model development, acquisition and evaluation in areas related to MPC. Initiate development of codes and models of transportation system operational and logistic parameters. Perform analytical and trade-off studies related to

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III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Engineering (Cont'd)			transportation overpacks. Continue to maintain and update transportation system technical baseline documents to reflect MPC designs planned for certification through configuration management.	overpacks. Perform analytical studies addressing Waste Acceptance and MGDS issues impacting transportation. Continue to maintain and update transportation system technical baseline documents to reflect MPC designs planned for certification through configuration management.	transportation system design and operations addressing the deployment and use of MPCs and MPC transportation overpacks. Continue to maintain and update transportation system technical baseline documents to reflect MPC designs planned for certification through configuration management. Perform analytical studies addressing Waste Acceptance and MGDS issues impacting transportation.
	$ 811	$ 640	$ 500	$ 700	$ 700
Casks	Conducted necessary activities to ensure transport equipment is available consistent with established baseline and schedule. Continued conceptual/detailed designs for MPC transportation cask and prepare procurement documents. Continued preparation for Nuclear Regulatory Commission (NRC) certification process for advanced-technology high-capacity casks, including design verification tests on the half-scale model of	Continue Nuclear Regulatory Commission (NRC) certification process for advanced-technology high-capacity truck casks, including regulatory tests and initiate procurement of prototype casks. Continue to address technical issues to support cask design and certification activities. Conduct specific studies and activities to resolve issues associated with burnup credit. Monitor and provide support and technical expertise for	TRANSPORTATION: Continue Nuclear Regulatory Commission (NRC) certification process for advanced-technology truck casks and continue prototype legal-weight truck (LWT) cask fabrication. Continue to address technical issues to support cask design and certification activities. Complete burnup credit topical report documenting specific studies, analytical capabilities, and verification	TRANSPORTATION: Complete prototype fabrication of an advanced- technology [GA-4 (or GA-9)] legal-weight truck (LWT) cask(s). Continue to address technical issues to support cask certification activities. Complete the conduct of studies and activities to resolve issues associated with burn-up credit. Monitor and provide support and technical expertise for design of high-level waste cask systems.	TRANSPORTATION: Continue to address technical issues and support cask design and certification activities. Begin fabrication of second prototype GA-4/9 cask. Monitor and provide support and technical expertise for design of high-level waste cask systems. Participate in cask-related codes and standards activities. Provide technical management and integration of cask development and fabrication activities.

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III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Casks (Cont'd)	the truck cask. Submitted Safety Analysis Report (SAR) to NRC for certification of legal-weight truck cask designs. Addressed possible NRC redesign issues, as necessary. Continued to address technical issues and to develop material and component technology to support cask design and certification activities. Monitored and provide support and technical expertise for design of high-level waste cask systems. Participated in cask-related codes and standards activities. Conducted specific studies and activities to resolve issues associated with cask weeping, burn-up credit and containment technology (containment source term and seals). Continued independent assessment of cask development. Provided technical management and integration of cask development activities.	design of high-level waste cask systems. Participate in cask-related codes and standards activities. Provide technical management and integration of cask development activities. Award contracts to initiate designs of Multi-Purpose Canister (MPC) transportation casks.	experiments in support of certification of MPC transportation and storage designs utilizing burnup credit. Monitor and provide support and technical expertise for design of high-level waste cask systems. Participate in cask-related codes and standards activities. Provide technical management and integration of cask development activities. MPC SUBSYSTEM: Complete Multi-Purpose Canister (MPC) cask system designs and submit Safety Analysis Reports (SARs) for MPC transportation casks. Begin design verification model testing to support certification. Initiate prototype fabrication of both large and small MPC casks.	Participate in cask-related codes and standards activities. Provide technical management, contract oversight, and integration of cask development activities. MPC SUBSYSTEM: Complete prototype fabrication of one 75 ton MPC transportation cask.	
	$ 8,126	$ 16,500	$ 20,500	$ 8,700	$ 8,700

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III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Support Systems	Continued development of reactor site assessments and maintain completed site evaluations. Assessed and refined alternatives for composition of transportation support system. Continued to develop system operational concepts, including definition of equipment, facility, and staff. Continued to develop and expand System Design Requirements documents for planning and control, field operations, service and maintenance. Continued assessment of overall cask fleet composition requirements and unique needs at individual reactors. Developed strategy for utilization of private carriers for highway, waterway and railway. Continued to provide operations input to cask design activities. Continued to monitor and report on fuel shipments and shipment planning activities throughout the industry, as well as other industry activities related to carriage, intermodal transfer equipment and cask maintenance.	Maintain completed site evaluations of reactor and storage facilities and update as required. Begin assessments and evaluations in preparation for acceptance, use, and the deployment of MPCs through coordination with utilities and other stakeholders. Continue assessment of the overall MPC and MPC transportation cask fleet composition requirements integrating the unique needs of individual reactor sites. Continue to provide detailed input on Transportation System operational requirements for MPC and MPC transportation cask design and development activities. Complete the testing of the tractor and trailer component of the legal-weight truck (LWT) cask system. Examine rail service, intermodal transfer, heavy haul, escort/in-transit physical security requirements, emergency response needs and develop plans to support transportation activities at utility sites, the repository, and potential storage sites if required.	TRANSPORTATION: Maintain completed site evaluations and update as required. Prepare plans and begin to develop detailed reactor site assessments and update information data bases in support of acceptance, use, and the deployment of Multi-Purpose Canisters (MPCs). Continue coordination of MPC and transportation issues with utilities and other stakeholders. Continue assessment of the overall MPC and MPC transportation cask fleet composition and operational requirements integrating the unique needs of individual reactor sites. Continue to provide detailed input on Transportation System operational requirements for MPC and MPC transportation cask design and development activities.	TRANSPORTATION: Continue development of reactor site-specific assessments and update information data bases as required. Perform assessments and evaluations in preparation for acceptance and utilization of MPCs. Work with Waste Acceptance and the Utilities to resolve specific MPC issues. Develop equipment requirements for handling MPCs and MPC transportation casks. Develop technical assistance packages and training programs to support distribution of the MPCs starting in 1998. Continue to provide detailed input on Transportation System operational requirements for MPC and MPC transportation cask certification and testing activities. Continue development of maintenance requirements for MPC transportation casks and related equipment Continue to develop transport options for MPC transportation casks. Assess and refine alternatives for composition of the operational	TRANSPORTATION: Continue development of reactor site-specific assessments and update information data bases as required. Perform assessments and evaluations in preparation for acceptance and utilization of MPCs. Work with Waste Acceptance and the Utilities to resolve MPC issues. Provide technical assistance and training to support distribution of the MPCs. Continue assessment of overall MPC transportation cask and legal-weight truck cask fleet composition requirements integrating the unique needs of individual reactor sites. Continue development of maintenance requirements for MPC transportation and legal-weight truck casks and related equipment. Support the distribution of the MPCs and related equipment to the utility storage sites. Continue to develop transport options for MPC transportation casks. Continue studies of rail and barge service,

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III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Support Systems (Cont'd)				Transportation System. Provide interface with other system elements to integrate transportation planning and operational concepts. Continue to provide support to the Institutional area on transportation issues.	intermodal transfer, heavy haul, and escort/in-transit physical security requirements and develop plans to support transportation activities at individual utility sites, YMPO, and potential interim storage sites if required. Update draftcarrier service contract specifications for use on short notice. Continue to suppot system engineering and Repository design efforts with transportation operational planning data and support the preparation and revision of program level documentation that directs transportation project level efforts. Assess and refine alternatives for composition of the operational Transportation System. Provide interface with other system elements to integrate transportation planning and operational concepts. Provide support and coordination to resolve policies on routing, emergency response, and physical security. Continue to provide

1388

III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Support Systems (Cont'd)					support to the Institutional area on transportation issues.
	$ 1,803	$ 1,840	$ 900	$ 2,000	$ 2,500
Regulatory	Monitored radioactive waste transportation regulatory developments and developed compliance strategies.	Monitor and report on significant Federal, state, and tribal radioactive waste transportation regulatory developments affecting the Civilian Radioactive Waste Management System (CRWMS) program and develop compliance strategies.	TRANSPORTATION: Monitor and report on significant Federal, state, and tribal radioactive waste transportation regulatory developments affecting the Civilian Radioactive Waste Management System (CRWMS) program and develop compliance strategies.	TRANSPORTATION: Monitor and report on significant Federal, state, and tribal radioactive waste transportation regulatory developments affecting Civilian Radioactive Waste Management System (CRWMS) program and development compliance strategies.	TRANSPORTATION: Monitor and report on significant Federal, state, and tribal radioactive waste transportation regulatory developments affecting Civilian Radioactive Waste Management System (CRWMS) program and development compliance strategies.
	$ 170	$ 175	$ 150	$ 175	$ 200
Project Management	Implemented and maintained project-level management systems. Maintained and updated transportation system management documents. Provided general management, liaison and coordination with related program elements. Monitored cost and schedule performance, prepare status reports, and maintained project-level networks.	Maintain and update project-level management systems and transportation system management documents. Provide general management, liaison, and coordination with related program elements. Monitor cost and schedule performance, prepare status reports, and maintain project-level networks.	PROJECT MANAGEMENT & INTEGRATION: Maintain and update project-level management systems and transportation system management documents. Provide management liaison and coordination with related program elements and vendors. Monitor cost and schedule performance, prepare status reports, and maintain project-level networks.	PROJECT MANAGEMENT & INTEGRATION: Maintain and update project-level management systems and transportation system management documents. Provide management liaison and coordination with related program elements and vendors. Monitor cost and schedule performance, prepare status reports, and maintain project-level networks.	PROJECT MANAGEMENT & INTEGRATION: Maintain and update project-level management systems and transportation system management documents. Provide management liaison and coordination with related program elements and vendors. Monitor cost and schedule performance, prepare status reports, and maintain project-level networks.

III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Project Management (Cont'd)	$ 857	$ 700	$ 1,600	$ 1,000	$ 1,100
Financial Assistance	No activity.	No activity.	No activity.	No activity.	No activity.
	$ 0	$ 0	$ 0	$ 0	$ 0
Quality Assurance	Continued to support Quality Assurance (QA) program, maintain and update records, and conduct contractor audits and surveillances.	Continue to support Quality Assurance (QA) program, maintain and update records, and contractor surveillances.	PROJECT MANAGEMENT & INTEGRATION: Continue to support Quality Assurance (QA) program, maintain and update records, and contractor surveillances.	PROJECT MANAGEMENT & INTEGRATION: Continue to support Quality Assurance (QA) program, maintain and update records, and contractor surveillances.	PROJECT MANAGEMENT & INTEGRATION: Continue to support Quality Assurance (QA) program, maintain and update records, and contractor surveillances.
	$ 170	$ 100	$ 100	$ 150	$ 175
Information Management	Completed planning activities related to project-based computer hardware/software and telecommunications equipment.	Initiate acquisition of project-based computer hardware/software and telecommunications equipment and support needed upgrades.	PROJECT MANAGEMENT & INTEGRATION: Initiate acquisition of project-based computer hardware/software and telecommunications equipment and support needed upgrades.	PROJECT MANAGEMENT & INTEGRATION: Initiate acquisition of project-based computer hardware/software and telecommunications equipment and support needed upgrades.	PROJECT MANAGEMENT & INTEGRATION: Initiate acquisition of project-based computer hardware/software and telecommunications equipment and support needed upgrades.
	$ 30	$ 25	$ 50	$ 50	$ 75
Environment, Safety, and Health	Developed plan for collecting transportation-related data and for developing specific models for the conduct of transportation risk analyses and to integrate risk management and NEPA compliance strategies. Maintained existing risk analysis models.	Analyze needs for specific models for the conduct of transportation impact analyses for program environmental documents supporting Multi-Purpose Canister (MPC) development and (MPC) EIS documents to provide transportation analysis input to MPC EIS. Acquire necessary	TRANSPORTATION: Continue to provide transportation input to the development of the Multi-Purpose Canister (MPC) Environmental Impact Statement (EIS). Acquire necessary models, codes, and data for transportation impact analysis for environmental	TRANSPORTATION: Continue to provide transportation input to the development of the MPC EIS. Completed development of the risk assessment codes to support EIS-related evaluations and make codes available for public use. Acquire necessary models,	TRANSPORTATION: Complete development of risk assessment tools and data collection information for the transportation program and make this system available for public use. Provide transportation input to support development of the repository EIS.

1890

III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Environment, Safety, and Health (Cont'd)	Continued transportation system risk assessment (TSRA) cask accident study. Provided support to transportation related activities regarding human factors and system safety. Provided oversight for environment, safety and health (ES&H) efforts associated with Monitored Retrievable Storage (MRS) Project Major Systems Acquisition (MSA). Provided updates of ES&H Five-Year Plan.	models, codes, and data for conducting transportation impact analyses for program environmental documents. Continue transportation system risk assessment (TSRA) cask accident study. Monitor activities regarding human factors and system safety aspects as related to the transportation system. Provide technical support on other environment, safety, and health topics including analyses related to the repository. Implement detailed strategy to integrate transportation program risk assessment activities. Continue to provide oversight for environment, safety and health (ES&H) efforts associated with the Waste Acceptance, Storage and Transportation (WAST) Project. Provide updates of ES&H Five-Year Plan.	documents. Continue cask accident studies to address stakeholder concerns. Provide technical support on other general environmental assessments and health and safety studies, including a human factor engineering study of the MPC designs, and support for a Five-Year Health and Safety Plan. Implement a transportation risk management activity to support transportation decision making and to coordinate transportation risk related activities. PROJECT MANAGEMENT & INTEGRATION: Continue to provide oversight for environment, safety and health (ES&H) efforts associated with MPC system development. Provide updates of ES&H Five-Year Plan.	codes, and data for transportation impact analysis for environmental documents. Continue cask severe accident studies incorporating detailed MPC cask system designs. Provide technical support on other general environmental assessments and health and safety studies, including a human factor engineering study of the MPC designs, and support for a Five-Year Health and Safety Plan. Continue implementation of the transportation risk management strategy to support transportation decision making and stakeholder issues. Continue support for the risk communication program. Coordinate transportation risk related activities within the Civilian Radioactive Waste Management System (CRWMS) program. PROJECT MANAGEMENT & INTEGRATION: Continue to provide oversight for environment, safety and health (ES&H) efforts associated with MPC system development.	Acquire necessary models, codes, and data for transportation impact analysis for environmental documents. Complete the severe cask accident studies for the final MPC cask system designs. Initiate development of a generic model of the severe accident cask analysis for public release. Provide technical support on other general environmental assessments and health and safety studies, including a human factor engineering study of the MPC designs, and support for a Five-Year Health and Safety Plan. Continue implementation of the transportation risk management strategy to support transportation decision making and stakeholder issues. Continue support for the risk communication program and stake-holder interface. Coordinate transportation risk related activities within the CRWMS and other DOE programs. PROJECT MANAGEMENT & INTEGRATION: Continue to provide

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III Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Environment, Safety, and Health (Cont'd)				Provide updates of ES&H Five-Year Plan.	oversight for environment, safety and health (ES&H) efforts associated with MPC system development. Provide updates of ES&H Five-Year Plan.
	$ 279	$ 1,320	$ 600	$ 1,300	$ 1,500
Institutional	Continued interactions with State, Tribal, and local governments, other Federal agencies, industry, and utilities to promote understanding and build public confidence. Continued cooperative agreements with regional groups to address institutional and technical transportation operations issues. Initiated policy development on implementation plan for assistance and funding to States and Indian Tribes, as required by Section 180(c) of the Nuclear Waste Policy Act (NWPA). Continued to integrate DOE transportation planning activities with stakeholders through support of Transportation External Coordination Working Group (TEC/WG). Continued to track resolution of	Continue interactions with State, Tribal, and local governments, other Federal agencies, and transportation industry to promote understanding and build public confidence. Continue cooperative agreements with regional groups to address institutional and technical transportation operations issues. Continue policy development and coordination with DOE emergency managers on implementation plans for assistance and funding to States and Indian Tribes, as required by Section 180(c) of the Nuclear Waste Policy Act (NWPA). Continue to track resolution of institutional issues with State, Tribal and transportation industry representatives. Continue activities assessing barge, rail,	TRANSPORTATION: Continue interactions with State, Tribal, and local governments, other Federal agencies, and transportation industry to promote understanding and build public confidence. Support all National Environmental Policy Act (NEPA)-driven interactions related to the transportation element of the Multi-Purpose Canister (MPC) system. Continue cooperative agreements with regional groups to address institutional and technical transportation operations issues. Continue to develop policy options on key transportation institutional issues and track resolution of institutional issues with State, Tribal and transportation industry representatives. Continue activities	TRANSPORTATION: Continue interactions with State, Tribal, and local governments, other Federal agencies, and transportation industry to promote understanding and build public confidence. Support all National Environmental Policy Act (NEPA)-driven interactions related to the transportation element of the Multi-Purpose Canister (MPC) system. Continue cooperative agreements with regional groups to address institutional and technical transportation operations issues. Continue to develop policy options on key transportation institutional issues and track resolution of institutional issues with State, Tribal and transportation industry representatives. Continue activities to	TRANSPORTATION: Continue interactions with State, Tribal, and local governments, other Federal agencies, and transportation industry to promote understanding and build public confidence. Continue cooperative agreements with regional groups to address institutional and technical transportation operations issues. Continue to develop policy options on key transportation institutional issues and tract resolution of institutional issues with State, Tribal and transportation industry representatives. Continue activities to resolve barge, rail, truck, and MPC transportation institutional issues. Provide institutional support for full-scale cask testing. Continue

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III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Institutional (Cont'd)	institutional issues with State, Tribal and industry transportation representatives. Continued activities assessing barge, rail, truck and overweight truck transport institutional issues. Initiated activities to assess Multi-Purpose Canister (MPC) transport institutional issues. Continued vehicle inspection pilot study and efforts for State adoption of uniform inspection procedures. Continued to establish rail and highway routing criteria. Continued to support Transportation Coordinating Group (TCG) meetings, technical workshops and public information activities.	truck, and Multi-Purpose Canister (MPC) transport institutional issues. Continue to support Transportation External Coordination Working Group (TEC) and Transportation Coordinating Group (TCG) meetings, technical workshops and public information activities. Continue to support development of a rail and highway routing policy and criteria for the Department.	assessing barge, rail, truck, and MPC transport institutional issues. Continue to support Transportation External Coordination Working Group (TEC) and Transportation Coordinating Group (TCG) meetings, technical workshops and public information activities. Continue to support the development of a Departmental route selection criteria. Continue development of procedures pursuant to 180(c) of the Nuclear Waste Policy Act (NWPA).	resolve barge, rail, truck, and MPC transportation institutional issues e.g. resolve full-scale cask-testing issue. Continue to support Transportation External Coordination Working group (TEC) and Transportation Coordination Group (TCG) meetings, technical workshops and public information activities. Continue to work with DOE emergency managers to support DOE assistance to states and tribes as a foundation for implementation of Section 180(c) of the Nuclear Waste Policy Act.	tosupport Transportation External Coordination Working group (TEC) and Transportation Coordinating Group (TCG) meetings, technical workshops and public information activities. Continue to work with DOE emergency managers to support DOE assistance to states and tribes as a foundation for implementation of Section 180(c) of the Nuclear Waste Policy Act.
	$ 1,918	$ 2,300	$ 2,200	$ 2,300	$ 2,500
Support Services	Conducted general administrative and project support activities, including administration, training facility/equipment services and publication/graphics services.	No activity.	No activity.	No activity.	No activity.
	$ 45	$ 0	$ 0	$ 0	$ 0

III. Transportation System (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Transportation System	$ 14,209	$ 23,600	$ 26,600	$ 16,375	$ 17,450

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR WASTE DISPOSAL ACTIVITIES

I. Preface: Waste Acceptance

The primary objectives of Waste Acceptance are to achieve the legal and physical transfer of waste to the Federal Government from the Nation's owners and generators of spent nuclear fuel (SNF) and high-level radioactive waste (HLW), once a Federal facility is ready to begin operations; support the transportation and disposal of waste, once accepted; and develop policy recommendations for the Department's 1998 Waste Acceptance policy.

Activities required to facilitate waste acceptance include: 1) development of a process for the orderly transfer of SNF and HLW into the Federal system consistent with the needs of both the Federal Government and the owners and generators; 2) support of the deployment of multi-purpose canisters (MPC) beginning in 1998, should a decision to deploy these canisters be made; 3) development of a plan and implementation of procedures to carry out the program's nuclear material Safeguards responsibilities; and 4) continuation of a collaborative dialogue with the Nation's nuclear utility companies as well as other owners and interested stakeholders.

Waste Acceptance activities include the development, negotiation, and management of contracts and agreements with owners and generators, consistent with the Standard Contract for the Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (10 CFR Part 961) (Standard Disposal Contract); which includes collecting fees from owners and generators consistent with the full cost recovery provisions of the Nuclear Waste Policy Act and developing the policy for credits from the Nuclear Waste Fund (NWF). Other activities include the collection, validation, and dissemination of all necessary waste-related data to support the Program's planning, design and operation; allocation of projected system acceptance capacity among owners and generators; management of the waste acceptance process with owners and generators, including performing necessary studies to determine technical waste acceptance criteria for various SNF and HLW waste forms; and establishment of the safeguards program that meets all national and international requirements, including pre-waste acceptance verification and post-acceptance material control and accountability (MC&A). Waste Acceptance activities also support the collaborative dialogue and technical interface with the Nation's nuclear utility companies as well as other owners and interested stakeholders; this dialogue exists in many forms, including the longstanding Annual Capacity Report (ACR) Issue Resolution Process (IRP), the Notice of Inquiry (NOI) process initiated on May 25, 1994; numerous informal discussions; and meetings and negotiations with Federal owners and generators.

The FY 1996 Congressional request of $7.5 million supports the resolution of waste acceptance issues identified through the ACR IRP and the NOI process, including the preparation of a Notice of Proposed Rulemaking (NOPR) to modify the Standard Disposal Contract to address the deployment of MPCs and potential forms of cost sharing to offset a portion of the financial burden associated with the continued storage of SNF at reactor sites. In addition, the request supports: meeting Standard Disposal Contract mandated requirements related to Acceptance Priority Ranking (APR), ACR, Delivery Commitment Schedule (DCS), and DCS exchange activities; development and implementation of the SNF Verification Plan; development of Waste Acceptance Criteria for alternative waste forms and support of technical working groups that develop waste form requirements; development and implementation of the Safeguards and Security Program Plan, the Safeguards and Security Standard, and MC&A operational procedures; development of the Waste Acceptance Operational Plan and Design Requirements Documents; NWF fee verification and revenue projections; and collection, validation and dissemination of SNF data and projections, including development of the unified database system.

II. Waste Acceptance

II. A. Summary Table: Waste Acceptance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
Total, Waste Acceptance	$3,116	$6,000	$7,600	$1,600	$10,000	$14,000

II. B. Laboratory and Facility Funding Table: Waste Acceptance

Oak Ridge National Laboratory	$225	$375	$375	$0	$375	$375
Washington Headquarters	2,891	5,625	7,225	1,600	9,625	13,625
Total, Waste Acceptance	$3,116	$6,000	$7,600	$1,600	$10,000	$14,000

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Acceptance					
Waste Acceptance	Continued support of Annual Capacity Report (ACR) IRP, including rulemaking. Continued to meet contractual requirements for developing and issuing the APR and ACR and processing DCSs. Continued quarterly fee verification and annual review of fee adequacy. Continued revenue projections. Developed and negotiated fees and terms of acceptance for Federally-owned SNF, defense-related and commercially reprocessed HLW. Conducted project-level planning and control. Defined MC&A policies and requirements for commercial SNF consistent with Nuclear Regulatory Commission regulations. Continued to collect, validate and disseminate detailed SNF data to users. Continued spent fuel projections. Developed 1994 Storage Requirements Report.	Prepare summary report on the responses to the NOI. Identify issues resulting from the NOI, the MPC program, and the existing ACR IRP that will require Standard Disposal Contract modification to implement an MPC-based CRWMS. Develop positions on Contract-related issues associated with implementing an MPC-based CRWMS. Prepare a Notice of Proposed Rule Making (NOPR) to modify the Standard Disposal Contract to address MPC deployment, cost sharing and various operational issues. Continue to meet contractual requirements for developing and issuing the APR and ACR and processing DCSs. Develop DCS Exchange review criteria. Develop and implement DCS Information Network. Evaluate Final Delivery Schedule (FDS) review and approval process and develop the methodology for reviewing FDSs. Continue quarterly fee verification and revenue projections.	WASTE ACCEPTANCE: Issue NOPR and evaluate responses. Prepare Final Rule addressing Standard Disposal Contract modifications to implement an MPC-based CRWMS and to resolve ACR IRP issues. Initiate development of procedures for managing cost sharing activities and MPC deployment. Continue to meet contractual requirements for developing and issuing the APR and ACR and processing DCSs and DCS Exchanges. Operate and maintain the DCS Information Network. Develop and test the methodology for reviewing FDSs, including the FDS Processing and Approval System (PAS). Continue quarterly fee verification and revenue projections. Complete impacts on NWF of alternative cost sharing programs. Complete development of MOAs that will address fees and terms of acceptance for Federally-owned SNF, defense-related and commercially reprocessed HLW.	WASTE ACCEPTANCE: Issue and begin to implement Final Rule revising the Standard Disposal Contract. Implement procedures that include the requirements for managing cost-sharing activities and MPC deployment. Begin to conform individual contracts to the revised Standard Disposal Contract. Continue to meet contractual requirements for developing and issuing the APR and ACR and processing DCSs, DCS Exchanges and FDSs. Operate and maintain the DCS Information Network and the FDS PAS. Continue quarterly fee verification and revenue projections. Continue to implement WAC Management Plan for HLW, SNF, and miscellaneous waste. Continue to evaluate alternative waste forms being considered for repository disposal to determine applicability of established WAC. Develop further refinements of and/or new WAC, based on evaluating proposed	WASTE ACCEPTANCE: Continue to conform individual contracts to the revised Standard Disposal Contract. Administer cost sharing and MPC programs with utilities. Continue to meet contractual requirements for developing and issuing the APR and ACR and processing DCSs, DCS Exchanges and FDSs. Operate and maintain the DCS Information Network and the FDS PAS. Continue quarterly fee verification and revenue projections. Continue to implement WAC Management Plan for HLW, SNF, and miscellaneous waste. Continue to evaluate alternative waste forms being considered for repository disposal to determine applicability of established WAC. Develop further refinements of and/or new WAC, based on evaluating proposed waste forms against established criteria. Continue to review producer documents for conformance with WAC. Continue to support EM and other technical working groups,

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III. Waste Acceptance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Acceptance (Cont'd)		Evaluate impacts on NWF of alternative cost sharing programs (NOI-related). Begin development of Memoranda of Agreement (MOA) that will address fees and terms of acceptance for Federally-owned SNF, defense-related and commercially reprocessed HLW. Begin financial and economic analysis of MOAs. Develop waste acceptance criteria (WAC) Management Plan that will establish process for alternate waste form qualification for HLW, SNF, and miscellaneous waste. Evaluate alternative waste forms being considered for repository disposal to determine applicability of established WAC. Develop further refinements of and/or new WAC, based on evaluating proposed waste forms against established criteria. Review producer documents for conformance with WAC. Support EM and other technical working groups, including the Technical Review Group (TRG); include TRG results into WAC development. Provide waste acceptance input	Complete financial and economic analysis of MOAs. Implement WAC Management Plan for HLW, SNF, and miscellaneous waste. Continue to evaluate alternative waste forms being considered for repository disposal to determine applicability of established WAC. Develop further refinements of and/or new WAC, based on evaluating proposed waste forms against established criteria. Continue to review producer documents for conformance with WAC. Continue to support EM and other technical working groups, including the TRG; include TRG results into WAC development. Provide waste acceptance input and review on system studies related to alternate waste forms. Continue to implement system acquisition process. Incorporate alternative waste form qualification process design requirements in WA-DRD. Provide waste acceptance input and review on system studies related to alternate waste forms and incorporate system study results into WA-DRD and the WA	waste forms against established criteria. Continue to review producer documents for conformance with WAC. Continue to support EM and other technical working groups, including the TRG; include TRG results into WAC development. Provide waste acceptance input and review on system studies related to alternate waste forms. Continue to implement system acquisition process. Continue to incorporate alternative waste form qualification process design requirements in WA-DRD. Continue to provide waste acceptance input and review on system studies related to alternate waste forms and incorporate system study results into WA-DRD and the WA detailed design. Complete preparation of operational procedures identified in WA-OP; support WA preliminary and detailed designs. Continue development of WA-DRD and support WA detailed design and CI-related activities. Review and revise system level planning and project documents impacting WA. Conduct	including the TRG; include TRG results into WAC development. Provide waste acceptance input and review on system studies related to alternate waste forms. Continue to implement system acquisition process. Test and implement alternative waste form qualification process. Continue to provide waste acceptance input and review on system studies related to alternate waste forms and incorporate system study results into WA Test and Integration activities. Support KD-4 Readiness Review Team. Use WA-DRD to support the test and integration of WA-CIs. Review and revise system level program and project documents impacting WA. Conduct project-level planning and control. Provide QA for activities subject to NQA-1. Support DOE interface with utilities, contractors, and the nuclear industry in activities related to the Standard Disposal Contract, waste acceptance, and other DOE defined tasks. Oversee project development of detailed

1998

III. Waste Acceptance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Acceptance (Cont'd)		and review on system studies related to alternate waste forms. Implement system acquisition process. Develop Waste Acceptance Operations Plan (WA-OP). Begin development of Waste Acceptance Design Requirements Document (WA-DRD). Review and revise system level program and project documents impacting WA. Conduct project-level planning and control. Provide Quality Assurance (QA) for activities subject to NQA-1. Support DOE interface with utilities, contractors, and the nuclear industry in activities related to the Standard Disposal Contract, waste acceptance, and other DOE defined tasks. Prepare Safeguards and Security Program Plan. Prepare Safeguards and Security Standard. Identify required procedures and revise existing procedures, as required. Develop additional chapter for the MC&A Plan that will establish the interface requirements for the SNF verification process for bare and canistered fuel. Complete evaluation of	preliminary design. Begin preparing operational procedures identified in WA-OP; support WA conceptual design; define WA configuration items (CI) and requirements. Continue to develop WA-DRD and support WA design activities. Review and revise system-level program and project documents impacting WA. Conduct project-level planning and control. Provide QA for activities subject to NQA-1. Support DOE interface with utilities, contractors, and the nuclear industry in activities related to the Standard Disposal Contract, waste acceptance, and other DOE defined tasks. Identify DOE and NRC interface responsibilities and define resulting DOE program and project responsibilities and interfaces. Coordinate development of program and project needs related to planning, equipment, training, and procedure development. Revise the MC&A Plan to incorporate experience resulting from testing and modifying SNF verification	project-level planning and control. Provide QA for activities subject to NQA-1. Support DOE interface with utilities, contractors, and the nuclear industry in activities related to the Standard Disposal Contract, waste acceptance, and other DOE defined tasks. Oversee project development of detailed plans, equipment design requirements, procedures, training and tests. Assure compliance process is developed and implemented. Oversee coordinated inclusion of Safeguards and Security in NRC license application. Coordinate security of NRC-mandated area with DOE-residual areas of responsibility. Continue to monitor unique bare and canistered fuel considerations resulting from verification for inclusion in the MC&A Plan. Implement Standard Disposal Contract verification process as defined in Final Rule. Complete development and testing of verification tracking system; implement and manage	plans, equipment design requirements, procedures, training and tests. Assure compliance process is developed and implemented. Continue to monitor unique bare and canistered fuel considerations resulting from verification for inclusion in the MC&A Plan. Implement and manage SNF data verification tracking system. Interact with DOE, IAEA, NRC, utilities and others concerning safeguards. Continue to coordinate program position on meeting IAEA standards and consolidate programmatic position on containment and surveillance devices, procedures and training; develop and revise a IAEA required Design Information Questionnaire (DIQ) and Facility Attachment. Continue to collect, validate and disseminate detailed SNF data to users. Develop 1998 spent fuel projections. Develop 1998 Storage Requirements Report. Develop the 1998 IDB Annual Report. Maintain and modify the UDB system.

1999

III. Waste Acceptance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Acceptance (Cont'd)		tamper-indicating devices for casks and canisters, including those used by International Atomic Energy Association (IAEA) states, and prepare recommendations for use in MPC design activities. Revise Transportation Safeguards Plan. Develop Final Verification Plan and begin development of implementing procedures required for verification. Begin development of verification tracking system. Determine revisions required to Standard Disposal Contract to implement verification; prepare draft revisions for inclusion in NOPR. Interact with DOE, IAEA, NRC, utilities and others concerning safeguards, including evaluation of IAEA approach to safeguards. Continue to collect, validate and disseminate detailed SNF data to users. Revise RW-859 Nuclear Fuel Data form to support SNF verification. Develop 1995 spent fuel projections. Develop 1995 Storage Requirements Report. Develop the 1995	procedures, including unique tracking and training aspects. Test and modify verification procedures with utilities. Complete development and testing of implementing procedures required for verification. Continue development of verification tracking system. Respond to comments on NOPR on verification-related issues and support issue resolution for issuance of Final Rule. Interact with DOE, IAEA, NRC, utilities and others concerning safeguards. Coordinate program position on meeting IAEA standards and consolidate programmatic position on containment and surveillance devices, procedures and training. Continue to collect, validate and disseminate detailed SNF data to users. Develop 1996 spent fuel projections. Develop 1996 Storage Requirements Report. Develop the 1996 IDB Annual Report. Continue to evaluate HLW and RINM databases to support RW data needs. Complete development of UDB system, including development and testing	SNF data verification tracking system. Interact with DOE, IAEA, NRC, utilities and others concerning safeguards. Continue to coordinate program position on meeting IAEA standards and consolidate programmatic position on containment and surveillance devices, procedures and training. Continue to collect, validate and disseminate detailed SNF data to users. Develop 1997 spent fuel projections. Develop 1997 Storage Requirements Report. Develop the 1997 IDB Annual Report. Continue to evaluate HLW and RINM databases to support RW data needs. Maintain and modify UDB system.	

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III. Waste Acceptance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Waste Acceptance (Cont'd)		Integrated Data Base (IDB) Annual Report. Evaluate existing DOE HLW and Reactor Irradiated Nuclear Material (RINM) databases to support RW data needs. Begin development of Unified Database (UDB) System to support program planning, design and operational requirements, including analyzing OCRWM data requirements and evaluating potential collection mechanisms.	routines for data acquisition, handling, and control and retrieval.		
	$ 3,116	$ 6,000	$ 7,600	$ 10,000	$ 14,000
Waste Acceptance	$ 3,116	$ 6,000	$ 7,600	$ 10,000	$ 14,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
(DOLLARS IN THOUSANDS)

PROGRAM SUPPORT

BUDGET ELEMENT	FY 1994 APPROP.	FY 1995 APPROP.	FY 1996 REQUEST	FY 1997 REQUEST	FY 1998 REQUEST
QUALITY ASSURANCE	13,243	14,137	14,528	14,984	15,448
SYSTEMS INTEGRATION & COMPLIANCE	12,117	12,663	13,013	13,421	13,837
PROGRAM MANAGEMENT	63,265	63,160	68,758	75,337	77,457
TOTAL, PROGRAM SUPPORT	88,625	89,960	96,299	103,742	106,742

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR WASTE FUND

I. Preface: Quality Assurance

This decision unit provides quality assurance (QA) support for the Yucca Mountain Site Characterization Office, the MRS Project and OCRWM Headquarters. Its objectives are to maintain and implement the OCRWM QA program, which is required by the Nuclear Regulatory Commission (NRC) for activities associated with the Yucca Mountain Site Characterization Project (YMP), spent fuel storage and transportation activities, waste acceptance activities, and to ensure that OCRWM activities are executed in a manner which protects the public health, safety and the environment. To accomplish these objectives, QA efforts are designed to verify that OCRWM activities are performed and documented in accordance with regulatory requirements and that personnel are qualified and adequately trained at the locations where the work is performed. Additionally, the QA program includes the provision of guidance and counsel on QA matters to line management and associated personnel in the areas of underground exploration and surface-based testing design at the Yucca Mountain candidate repository site, multi-purpose canister system (MPC) design, and transportation activities.

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II. A. Summary Table: Quality Assurance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
Total, Quality Assurance	$13,243	$14,137	$14,528	$391	$14,984	$15,448

III. Activity Descriptions (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Quality Assurance	Provide Quality Assurance (QA) direction and guidance to assure proper implementation of the OCRWM QA Program as related to: the Mined Geologic Disposal System (MGDS); including site characterization activities, exploratory studies facility(ESF), and surface based testing(SBT); the Waste Acceptance, Storage and Transportation Project (WAST); DOE's Office of Environmental Management high-level waste vitrification activities; and OCRWM Headquarters support activities. Ensure that activities are executed in a manner which protects worker and public health, safety and the environment. Perform required verification activities such as audits, surveillances, and reviews. Develop and maintain OCRWM QA program implementing documents. Provide QA guidance to line management and Affected Organizations through quality engineering interfaces and in-line reviews. Provide support for the OCRWM Quality Concerns	Provide Quality Assurance (QA) direction and guidance to assure proper implementation of the OCRWM QA Program as related to: the Mined Geologic Disposal System (MGDS); including site characterization activities, exploratory studies facility(ESF), and surface based testing(SBT); the Waste Acceptance, Storage and Transportation Project (WAST); DOE's Office of Environmental Management high-level waste vitrification activities; and OCRWM Headquarters support activities. Ensure that activities are executed in a manner which protects worker and public health, safety and the environment. Perform required verification activities such as audits, surveillances, and reviews. Develop and maintain OCRWM QA program implementing documents. Provide QA guidance to line management and Affected Organizations through quality engineering interfaces and in-line reviews. Provide support for the OCRWM Quality Concerns	Provide Quality Assurance (QA) direction and guidance to assure proper implementation of the OCRWM QA Program as related to: the Mined Geologic Disposal System (MGDS); including site characterization activities, exploratory studies facility(ESF), and surface based testing(SBT); the Waste Acceptance, Storage and Transportation Project (WAST); DOE's Office of Environmental Management high-level waste vitrification activities; and OCRWM Headquarters support activities. Ensure that activities are executed in a manner which protects worker and public health, safety and the environment. Perform required verification activities such as audits, surveillances, and reviews. Develop and maintain OCRWM QA program implementing documents. Provide QA guidance to line management and Affected Organizations through quality engineering interfaces and in-line reviews. Provide support for the OCRWM Quality Concerns	Provide Quality Assurance (QA) direction and guidance to assure proper implementation of the OCRWM QA Program as related to: the Mined Geologic Disposal System (MGDS); including site characterization activities, exploratory studies facility(ESF), and surface based testing(SBT); the Waste Acceptance, Storage and Transportation Project (WAST); DOE's Office of Environmental Management high-level waste vitrification activities; and OCRWM Headquarters support activities. Ensure that activities are executed in a manner which protects worker and public health, safety and the environment. Perform required verification activities such as audits, surveillances, and reviews. Develop and maintain OCRWM QA program implementing documents. Provide QA guidance to line management and Affected Organizations through quality engineering interfaces and in-line reviews. Provide support for the OCRWM Quality Concerns	Provide Quality Assurance (QA) direction and guidance to assure proper implementation of the OCRWM QA Program as related to: the Mined Geologic Disposal System (MGDS); including site characterization activities, exploratory studies facility(ESF), and surface based testing(SBT); the Waste Acceptance, Storage and Transportation Project (WAST); DOE's Office of Environmental Management high-level waste vitrification activities; and OCRWM Headquarters support activities. Ensure that activities are executed in a manner which protects worker and public health, safety and the environment. Perform required verification activities such as audits, surveillances, and reviews. Develop and maintain OCRWM QA program implementing documents. Provide QA guidance to line management and Affected Organizations through quality engineering interfaces and in-line reviews. Provide support for the OCRWM Quality Concerns

III. Quality Assurance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Quality Assurance (Cont'd)	Program. Continue to support QA training efforts and ensure that personnel are qualified and adequately trained. Conduct required QA management assessment, train team members, prepare basic action plan, resolve comments and develop recommendations based on assessment results. Conduct independent appraisal of line organization self-assessments in the area of Environment, Safety and Health and prepare required annual report. Provide general level of effort QA program support for all RW offices.	Program. Continue to support QA training efforts and ensure that personnel are qualified and adequately trained. Conduct required QA management assessment, train team members, prepare basic action plan, resolve comments and develop recommendations based on assessment results. Conduct independent appraisal of line organization self-assessments in the area of Environment, Safety and Health and prepare required annual report. Provide general level of effort QA program support for all RW offices.	Program. Continue to support QA training efforts and ensure that personnel are qualified and adequately trained. Conduct required QA management assessment, train team members, prepare basic action plan, resolve comments and develop recommendations based on assessment results. Conduct independent appraisal of line organization self-assessments in the area of Environment, Safety and Health and prepare required annual report. Provide general level of effort QA program support for all RW offices. DIRECT YMP SUPPORT $6,480 DIRECT OWAST $3,084 OVERALL PROGRAN SUPPORT $4,964	Program. Continue to support QA training efforts and ensure that personnel are qualified and adequately trained. Conduct required QA management assessment, train team members, prepare basic action plan, resolve comments and develop recommendations based on assessment results. Conduct independent appraisal of line organization self-assessments in the area of Environment, Safety and Health and prepare required annual report. Provide general level of effort QA program support for all RW offices. DIRECT YMP SUPPORT $6,684 DIRECT OWAST $3,181 OVERALL PROGRAM SUPPORT $5,119	Program. Continue to support QA training efforts and ensure that personnel are qualified and adequately trained. Conduct required QA management assessment, train team members, prepare basic action plan, resolve comments and develop recommendations based on assessment results. Conduct independent appraisal of line organization self-assessments in the area of Environment, Safety and Health and prepare required annual report. Provide general level of effort QA program support for all RW offices. DIRECT YMP SUPPORT $6,891 DIRECT OWAST $3,269 OVERALL PROGRAM SUPPORT $5,288
	$ 13,243	$ 14,137	$ 14,528	$ 14,984	$ 15,448
Quality Assurance	$ 13,243	$ 14,137	$ 14,528	$ 14,984	$ 15,448

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KEY ACTIVITY SUMMARY

NUCLEAR WASTE FUND

I. Preface: Systems Integration and Compliance

The overall objectives of the Systems Integration and Compliance decision unit are to ensure that: 1) the various components of the waste management system are integrated into a single system that is safe, efficient, reliable, cost-effective, and in compliance with all applicable regulatory guidelines, and, 2) the activities leading to the final waste management system are conducted in accordance with the regulatory guidance provided by the governing authorities. The approach to accomplishing these objectives is to identify, interpret, and baseline technical requirements of the total system, maintain current descriptions of the systems, its components, and interfaces, enhance communication among parties responsible for individual system components and functions, develop and maintain a capability to fully assess alternative concepts, conduct systems studies and recommend improvements, support development of equipment and processes having the potential to improve the system, conduct regulatory compliance reviews, and continue interactions with the Nuclear Regulatory Commission (NRC) to discuss technical and management issues and to resolve licensing issues. These activities are critical to the success of the overall program schedule as they directly impact the NRC licensing process for Office of Civilian Radioactive Waste Management (OCRWM) activities and facilities.

In FY 1996, Systems and Compliance activities will focus on support of: Yucca Mountain Exploratory Studies Facility (ESF) design and construction, surface-based testing, early licensing resolution of waste acceptance issues, Advanced Conceptual and Preliminary Design of the Repository and Engineered Barrier System, development of Multipurpose Canisters (MPCs), and systems analysis and integration. This allows systems engineering support for on-going site characterization work and design activities in support of the Yucca Mountain Site Characterization Project (YMP) and acceleration of selected critical activities (e.g., MPC development, etc.) and any required temporary storage activities, effective configuration management, comprehensive systems modeling and analysis, interactions with utilities, the NRC, and other groups to assure a sound, cost-effective and safe system with optimal interfaces and reliable performance, and completion of licensing documentation at a level of detail that will enable the NRC to complete its review in a timely manner and assure compliance with regulations.

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II. A. Summary Table: Systems Integration and Compliance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
Systems Integration	$8,734	$9,129	$9,369	$240	$9,663	$9,962
Regulatory Compliance	3,383	3,534	3,644	110	3,758	3,875
Total, Systems Integration and Compliance	$12,117	$12,663	$13,013	$350	$13,421	$13,837

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Integration and Compliance					
Systems Integration	Supported necessary site characterization and repository design activities to obtain a license from the Nuclear Regulatory Commission (NRC). Maintained and updated baseline system requirements documents as required to support program-and project-level design activities (e.g., Exploratory Studies Facility (ESF) design/site preparation and construction and repository design), and to incorporate changes in regulations, statutes, and Program policy. Continued Interface Control Working Group (ICWG), sponsored system integration workshops, and initiated development of Interface Control Documents (ICDs). Updated requirements database to reflect current changes and additions to statutes and regulations. Completed incorporation of program and project implementing documents into Automated Requirements Management System (ARMS).	Provide systems engineering and integration support for the OCRWM program and on-going Yucca Mountain site characterization, Exploratory Studies Facility (ESF) Title II design, Waste Package and Repository Advanced Conceptual Design activities, and the Multipurpose Canister (MPC) procurement effort. Ensure that the baseline system described in the Program-level System Requirements Documents is consistent with current approved Program Approach and responsive to project-level design needs. Provide initial support for high-level waste forms potentially acceptable into the CRWMS. Develop system-level acceptance strategies and requirements for these other DOE waste forms. Provide guidance and communicate requirements to the design of repository, surface facilities and waste packages, and MPC storage and transportation systems.	Provide systems engineering and integration support for the OCRWM program and on-going Yucca Mountain site characterization, Exploratory Studies Facility (ESF) Title II design and construction, Waste Package and Repository Advanced Conceptual Design activities, and the Multipurpose Canister (MPC) development effort. Ensure that the baseline system described in the Program-level System Requirements Documents is consistent with current approved program policies and responsive to project-level design needs. Provide increased management and technical support for high-level waste forms potentially acceptable into the CRWMS by conducting requirements analysis and system studies to assess technical, cost, and health and safety issues such as long-term performance, criticality and RCRA-compliance. Develop system-level acceptance	Continue to provide Program-level systems engineering and integration support for on-going site characterization, waste package and repository design activities, and Multipurpose Canister (MPC)-related procurement, manufacture and deployment. Ensure that the baseline system described in the Program-level System Requirements Documents is consistent with current approved program policies and responsive to project-level design needs. Continue Interface Control Working Group (ICWG) efforts to resolve Program-level cross-cutting issues. Maintain the integrity and currency of the Program-level Interface Control Documents. Continue to conduct System Integration Workshops to facilitate Program information exchange and communicate program decisions and system issues with all program participants. Provide technical and system	Continue systems engineering and integration support for the OCRWM program and on-going Yucca Mountain surface and subsurface site characterization, Exploratory Studies Facility (ESF) Title II design, waste package and repository title II activities, and Multipurpose Canister (MPC)-related procurement and operations. Ensure, through management and technical review, traceability analyses, and revision where appropriate, that the baseline system described in the Program-level System Requirements Documents is consistent with current approved program policy and responsive to project-level design needs. Support Interface Control Working Group (ICWG) efforts to resolve Program-level cross-cutting issues. Maintain the Program-level Interface Control Documents, documenting interface agreements which affect two or more system

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III. Systems Integration and Compliance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Integration (Cont'd)	Installed radiological calculation software models. Enhanced Waste Stream Analysis Model using utility Delivery Commitment Schedules and upgraded model to handle MPCs and multiple storage site scenarios. Continued detailed systems engineering studies that will provide guidance to repository Advanced Conceptual Design (ACD) planning, and impact system costs, reliability, tradeoffs, and waste acceptance procedures. Continued implementation of specialty engineering, including system safety and human factors engineering, and hazard analyses. Updated, maintained, and implemented OCRWM Baseline Management Plans, and Baseline Management Standards and Procedures. Executed Secretariat support functions for OCRWM Baseline Change Control Board. Prepared for audits and verification of OCRWM baseline management implementation. Review and provide guidance to Yucca Mountain Site Characterization Project (YMP) to develop project	Redefine the mission of the Interface Control Working Group (ICWG) efforts to resolve Program-level interface management functions. Develop Interface Control Documents, identifying interface agreements which affect two or more system elements. Continue to conduct OCRWM System Integration Workshops to facilitate information exchange and communication among program participants. Support the evaluation of MPC system design proposals. As site characterization and repository design activities progress, incorporate latest concepts into system operation models, conduct system studies to evaluate impact of MPC and repository design and operational concepts on the overall CRWMS, and assess system cost tradeoffs, waste logistics, and storage options. Maintain and update system analysis capabilities by incorporating the latest concepts into necessary cost , logistics and engineering models and providing qualified	requirements for these other DOE waste forms. Provide guidance and communicate requirements to the design of repository, surface facilities and waste packages, and MPC storage and transportation systems. Increase Interface Control Working Group (ICWG) efforts to resolve Program-Level cross-cutting issues. Implement and maintain Interface Control Documents, identifying and evaluating interface agreements which affect two or more system elements. Continue to conduct OCRWM System Integration Workshops to facilitate information exchange and communication with all program participants. Increase support as needed for the evaluation of MPC system designs. As site characterization and repository design activities progress, incorporate latest concepts into system operation models, conduct system studies to evaluate impact of MPC and repository design and operational concepts on the overall CRWMS, and assess system cost tradeoffs,	studies support for Waste Form Criteria development activities (e.g., Reactor Irradiated Nuclear Materials, High Level Waste, and other waste forms potentially requiring disposal). Using the latest information from waste generators, review and revise, as appropriate, system operational concepts and system-level acceptance requirements for other DOE waste forms. Continue to maintain and update system capabilities by incorporating the latest concepts into necessary cost , logistics and engineering models and providing qualified technical data to support studies. Focus system-level engineering studies to support project-level design activities and facilitate the integration of canisters (including MPCs) and other components handled at waste generator sites. Assess systems cost tradeoffs, operational logistics, and storage options as a function of disposal and MPC concepts. Continue to identify, assess, and	elements. As repository design activities progress, incorporate latest concepts into system operation models. Provide radiological characteristics of waste packages for performance assessment of repository pre- and post-closure. Conduct system studies and analyses of at-reactor or other interim storage issues to support system decisions and negotiations with utilities. Analyze cost and health and safety impacts of transportation alternatives and of High Level Waste acceptance into the CRWMS. Conduct system-level engineering studies to support project-level design activities and facilitate the integration of remote handling requirements of canisters (including MPCs) and other components handled at waste generator sites. Assess system costs, tradeoffs, waste acceptance procedures, and storage options, as a function of disposal and MPC concepts. Continue to conduct System Integration

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III. Systems Integration and Compliance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Integration (Cont'd)	configuration management plans and procedures. Maintain and enhance ARMS database and Configuration Information System.	technical data to support studies. Conduct system studies and analyses of at-reactor storage issues to support programmatic decisions. Continue to identify and allocate applicable requirements from Federal and State codes, regulations, notices, and orders and enter into the OCRWM Automated Requirements Management System (ARMS). Assess current changes to statutes and regulations and update Program requirements as appropriate and incorporate into ARMS. Revise Program System Engineering Management Plan to incorporate process improvements which better integrate system engineering, design, and program control needs. Develop Test and Evaluation Master Plan to verify compliance with identified technical and programmatic requirements. Continue to integrate, maintain and implement OCRWM Baseline Management Plan and procedures, continue support of the Program (Level 1) Change Control Board, and support audits and verifications of baseline management	waste logistics, and storage options. Maintain and update system analysis capabilities by incorporating the latest concepts into necessary cost, logistics and engineering models and providing qualified technical data to support studies. Conduct system studies and analyses of at-reactor or other interim storage issues to support programmatic and system operational decisions. Continue analyses of technical, cost, and health and safety impacts of physical system alternatives to ensure effective integration with canisters (including MPCs) and other components handled at waste generator sites. Continue to identify and allocate applicable requirements from Federal and State codes, regulations, notices, and orders and enter into the OCRWM Automated Requirements Management System (ARMS). Assess current changes to statutes and regulations and update Program requirements as appropriate and incorporate into ARMS.	allocate applicable requirements from Federal and State codes, regulations, notices, and orders and enter into the OCRWM Automated Requirements Management System (ARMS). Continue implementation of the Test and Evaluation program to verify compliance with identified requirements. Continue to integrate, update, and maintain the OCRWM Baseline Management Plans and procedures, continue support of the Program Change Control Board, and support audits and verification of baseline management implementation. Continue to operate and maintain the OCRWM-wide Configuration Information System (CIS) and ARMS. Continue to conduct the Configuration Management Implementation Group to monitor change control activities at all level boards. Continue to support document control of Program Cost, Schedule, and technical baselines and programmatic documents.	Workshops to facilitate Program information exchange and communicate program decisions and system issues with all program participants. Continue to identify, assess, and allocate, where appropriate, applicable requirements from Federal and State codes, regulations, notices, orders, etc. and enter into the OCRWM Automated Requirements Management system (ARMS). Assess current changes to statutes and regulations and update Program requirements, as appropriate, and incorporate into ARMS. Continue support of the OCRWM Test and Evaluation program to verify compliance with identified requirernents. Continue to integrate, maintain and implement the OCRWM Baseline Management Plan and Procedures, continue support of the Level 1 Baseline Change Control Board, support audits and verification of baseline management integration. Continue to operate and maintain the OCRWM-wide Configuration Information System (CIS). Continue to conduct the
				OVERALL PROGRAM SUPPORT See activity	

III. Systems Integration and Compliance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Integration (Cont'd)		implementation. Operate and maintain training of the OCRWM-wide Configuration Information System (CIS) and ARMS. Continue to conduct the Configuration Management Implementation Group to monitor change control activities at all level boards. Continue to support document control of Program technical, cost and schedule baselines and programmatic documents.	Facilitate implementation of the Test and Evaluation program to verify compliance with identified technical and programmatic requirements. Continue to integrate, maintain, and implement OCRWM Baseline Management Plan and procedures, continue support of the Program (Level 1) Change Control Board, and support audits and verifications of baseline management implementation. Operate and maintain the OCRWM-wide Configuration Information System (CIS) and ARMS. Provide ARMS and CIS Interfaces with the OCRWM INFOSTREAMS. Continue to conduct the Configuration Management Implementation Group to monitor change control activities at all level boards. Continue to support document control of Program technical, cost and schedule baselines and programmatic documents. OVERALL PROGRAM SUPPORT See activity description above. ($ 6,414)	description above. ($ 6,414) DIRECT YMSCO SUPPORT See activity description above. ($ 1,392) DIRECT OWAST SUPPORT See activity description above. ($ 1,857)	Configuration Management Implementation Group to monitor change control activities at all level boards. Continue to support document control of Program Cost, Schedule, and Technical baselines and programmatic documents. Provide controls and analysis to support licensing, design control, and design traceability. OVERALL PROGRAM SUPPORT See activity description above. ($ 6,513) DIRECT YMSCO SUPPORT See activity description above. ($ 1,671) DIRECT OWAST SUPPORT See activity description above. ($ 1,778)

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III. Systems Integration and Compliance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Systems Integration (Cont'd)			DIRECT YMSCO SUPPORT See activity description above. ($ 1,245) DIRECT OWAST SUPPORT See activity description above. ($ 1,710)		
	$ 8,734	$ 9,129	$ 9,369	$ 9,663	$ 9,962
Regulatory Compliance	Continued to issue and update regulatory guidance documents for Yucca Mountain Site Characterization (YMSC) and multi-purpose canister (MPC) transportation initiatives. Developed OCRWM input to proposed regulatory initiatives from NRC, EPA, and DOE to ensure implementation by OCRWM. Continued ES&H coordination for OCRWM regulatory documents and mange issue resolution activities. Reviewed/approved all operations Office NEPA-level determinations and OCRWM EAs and EISs. Continued to provide regulatory compliance reviews of transportation (MPC) activities, and track Yucca Mountain	Continue to issue and update regulatory guidance for YMSC, MRS, transportation, and MPC initiatives. Develop OCRWM input to proposed regulatory initiatives from MRS, EPA, DOT, and DOE to ensure implementation by OCRWM. Continue ES&H coordination with other DOE offices for OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM NEPA activities. Review all Operations Office NEPA-level determinations and OCRWM EAs and EISs. Develop OCRWM positions regarding DOE regulations, standards and regulatory	OVERALL PROGRAM SUPPORT Continue to issue and update regulatory guidance for YMSC, MRS, transportation, and MPC initiatives. Develop OCRWM input to proposed regulatory initiatives from MRS, EPA, DOT, and DOE to ensure implementation by OCRWM. Continue ES&H coordination with other DOE offices for OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM NEPA activities. Review all Operations Office NEPA-level determinations and OCRWM EAs and EISs. Develop OCRWM positions regarding DOE	OVERALL PROGRAM SUPPORT Continue to issue and update regulatory guidance for YMSC, MRS, transportation, and MPC initiatives. Develop OCRWM input to proposed regulatory initiatives from MRS, EPA, DOT, and DOE to ensure implementation by OCRWM. Continue ES&H coordination with other DOE offices for OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM NEPA activities. Review all Operations Office NEPA-level determinations and OCRWM EAs and EISs. Develop OCRWM positions regarding DOE	OVERALL PROGRAM SUPPORT Continue to issue and update regulatory guidance for YMSC, MRS, transportation, and MPC initiatives. Develop OCRWM input to proposed regulatory initiatives from MRS, EPA, DOT, and DOE to ensure implementation by OCRWM. Continue ES&H coordination with other DOE offices for OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM regulatory documents and support issue resolution activities. Coordinate OCRWM NEPA activities. Review all Operations Office NEPA-level determinations and OCRWM EAs and EISs. Develop OCRWM positions regarding DOE

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III. Systems Integration and Compliance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Regulatory Compliance (Cont'd)	regulatory compliance. Continued OCRWM regulatory compliance management program regarding environmental protection, radiological and non-radiological public safety, and occupational safety and health. Conducted OCRWM QA management assessments. Continued coordination of annotated outline reviews for the repository, and MPC license applications (LAs). Increased interaction with NRC licensing process documents as they relate to Yucca Mountain surface-based testing, and development of MPCs. Developed DOE petitions for licensing-related rulemakings. Developed and negotiate MOUs and procedural agreements. Continued development of policy basis for nuclear safeguards/security program for OCRWM activities.	policies. Continue to provide regulatory compliance oversight, and track field regulatory compliance. Develop guidance for safety and health performance strategies for site characterization, waste acceptance, and transportation offices. Develop and negotiate one MOU with NRC. Provide comments on draft NRC rulemakings. Develop one DOE petition for licensing-related rulemaking. Maintain interaction with NRC for resolution of issues concerning licensing. Review Site suitability evaluations. Continue review of one annotated outline for the repository LA.	regulations, standards and regulatory policies. Continue to provide regulatory compliance oversight, and track field regulatory compliance. Develop guidance for safety and health performance strategies for site characterization, waste acceptance, and transportation offices. Provide comments on draft NRC rulemakings. Develop one DOE petition for licensing-related rulemaking. Maintain interaction with NRC for resolution of issues concerning licensing. ($ 2,442)	regulations, standards and regulatory policies. Continue to provide regulatory compliance oversight, and track field regulatory compliance. Develop guidance for safety and health performance strategies for site characterization, waste acceptance, and transportation offices. Provide comments on draft NRC rulemakings. Develop one DOE petition for licensing-related rulemaking. Maintain interaction with NRC for resolution of issues concerning licensing. ($ 2,518)	regulations, standards and regulatory policies. Continue to provide regulatory compliance oversight, and track field regulatory compliance. Develop guidance for safety and health performance strategies for site characterization, waste acceptance, and transportation offices. Provide comments on draft NRC rulemakings. Develop one DOE petition for licensing-related rulemaking. Maintain interaction with NRC for resolution of issues concerning licensing. ($ 2,596)
			DIRECT YMSCO SUPPORT	DIRECT YMSCO SUPPORT	DIRECT YMSCO SUPPORT
			Review Site suitability evaluations. Continue review of one annotated outline for the repository LA. ($ 1,202)	Review Site suitability evaluations. Continue review of one annotated outline for the repository LA. ($ 1,240)	Review Site suitability evaluations. Continue review of one annotated outline for the repository LA. ($ 1,279)
	$ 3,383	$ 3,534	$ 3,644	$ 3,758	$ 3,875
Systems Integration and Compliance	$ 12,117	$ 12,663	$ 13,013	$ 13,421	$ 13,837

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
NUCLEAR WASTE FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR WASTE FUND

I. Preface: Program Management

Program Management provides funding for the following activity groupings: 1) Program Direction (Federal salaries, benefits, and travel), 2) Strategic Planning, 3) International Waste Management Technology (international cooperative agreements and information exchange), 4) External Relations (public outreach and education activities), 5) Program Control and Administration (Program cost and schedule control, Nuclear Waste Fund management and audit services, budget activities, and administrative support), 6) Information Management (computer systems development and support services), 7) Contract Business Management (funding for support contractors' indirect and overhead activities), 8) First Repository Support (Program-level repository support not included in the Yucca Mountain Site Characterization Major Systems Acquisition (MSA), and 9) Monitored Retrievable Storage (MRS) Project Support (Program-level support for spent-fuel storage and transportation activities).

II. A. Program Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Change	FY 1997 Request	FY 1998 Request
Program Direction	$18,629	$20,135	$22,504	$2,369	$26,339	$28,878
Strategic Planning	1,928	1,947	2,001	54	2,064	2,128
Int'l Waste Management Technology	7,154	7,382	7,586	204	7,824	8,067
External Relations	4,949	5,147	5,289	142	5,455	5,624
Program Control and Administration	7,384	8,078	10,092	2,014	12,011	11,769
Information Management	18,071	15,114	15,781	667	15,966	15,139
Contract Business Management	2,471	2,570	2,641	71	2,724	2,808
First Repository Support	866	901	926	25	955	984
MRS Support	1,813	1,886	1,938	52	1,999	2,060
Total, Program Management	$63,265	$63,160	$68,758	$5,598	$75,337	$77,457

II. B. Laboratory and Facility Funding Table: Program Management

Chicago Operations Office	$1,096	$1,140	$1,185	$45	$1,230	$1,280
Idaho Operations Office	635	660	685	25	715	740
Lawrence Berkeley Lab	1,795	1,865	1,940	75	2,015	2,095
Lawrence Livermore National Lab	1,478	1,537	1,600	63	1,660	1,730
Los Alamos National Lab	1,037	1,080	1,125	45	1,170	1,215
Nevada Operations Office	1,399	1,455	1,513	58	1,575	1,635
Oak Ridge Institute for Science & Education	420	437	455	18	470	490
Oak Ridge Operations Office	163	170	175	5	183	190
Richland Operations Office	153	159	165	6	170	180
Yucca Mountain Project Office	4,489	4,668	4,854	186	5,048	5,250
Washington Headquarters	50,600	49,989	55,061	5,072	61,101	62,652
Total, Program Management	$63,265	$63,160	$68,758	$5,598	$75,337	$77,457

III. Activity Descriptions. (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Program Management					
Program Direction	Provide salaries, benefits, and travel for 251 FTEs	Provide salaries, benefits, and travel for 245 FTEs.	FEDERAL SALARIES Provide salaries, benefits, and travel for 270 FTEs.	FEDERAL SALARIES Provide salaries, benefits, and travel for 303 FTEs.	FEDERAL SALARIES Provide salaries, benefits, and travel for 321 FTEs.
	$ 18,629	$ 20,135	$ 22,504	$ 26,339	$ 28,878
Strategic Planning	Continue strategic and contingency planning to support program activities and to meet Departmental requirements. Conduct analyses of technology issues related to strategic planning initiatives. Develop documents articulating program strategy and approach. Conduct	Continue strategic and contingency planning to support program activities and to meet Departmental requirements. Conduct analyses of technology issues related to strategic planning initiatives. Develop documents articulating program strategy and approach. Conduct	OVERALL PROGRAM SUPPORT Continue strategic and contingency planning to support program activities and to meet Departmental requirements. Conduct analyses of technology issues related to strategic planning initiatives. Develop documents articulating	OVERALL PROGRAM SUPPORT Continue strategic and contingency planning to support program activities and to meet Departmental requirements. Conduct analyses of technology issues related to strategic planning initiatives. Develop documents articulating	OVERALL PROGRAM SUPPORT Continue strategic and contingency planning to support program activities and to meet Departmental requirements. Conduct analyses of technology issues related to strategic planning initiatives. Develop documents articulating

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Strategic Planning (Cont'd)	special studies in support of integration of system planning and integration activities, strategy for new and additional waste forms, public involvement and socioeconomic aspects of National Energy Policy Act.	special studies in support of integration of system planning and integration activities, strategy for new and additional waste forms, public involvement and socioeconomic aspects of NEPA.	program strategy and approach. Conduct special studies in support of integration of system planning and integration activities, strategy for new and additional waste forms, public involvement and socioeconomic aspects of NEPA.	program strategy and approach. Conduct special studies in support of integration of system planning and integration activities, strategy for new and additional waste forms, public involvement and socioeconomic aspects of NEPA.	program strategy and approach. Conduct special studies in support of integration of system planning and integration activities, strategy for new and additional waste forms, public involvement and socioeconomic aspects of NEPA.
	$ 1,928	$ 1,947	$ 2,001	$ 2,064	$ 2,128
Int'l Waste Management Technology	Continue to maintain current knowledge of developments in foreign high-level radioactive waste management programs and disseminate this knowledge within the U.S. program. ($1,577)	Continue to maintain current knowledge of developments in foreign high-level radioactive waste management programs and disseminate this knowledge within the U.S. program. ($1,282)	OVERALL PROGRAM SUPPORT Continue to maintain current knowledge of developments in foreign high-level radioactive waste management programs and disseminate this knowledge within the U.S. program. ($1,328)	OVERALL PROGRAM SUPPORT Continue to maintain current knowledge of developments in foreign high-level radioactive waste management programs and disseminate this knowledge within the U.S. program. ($1,369)	OVERALL PROGRAM SUPPORT Continue to maintain current knowledge of developments in foreign high-level radioactive waste management programs and disseminate this knowledge within the U.S. program. ($1,412)
	Continue participation in and support of Canadian Subsidiary Agreement #2, Swiss Project Agreement #3, and the Swedish Hard Rock Laboratory Agreement. Provide support for coordination and planning of international cooperative agreements and testing programs with Yucca Mountian Project. Participate in consensus development activities and	Continue participation in and support of Canadian Subsidiary Agreement #2, Swiss Project Agreement #3, and the Swedish Hard Rock Laboratory Agreement. Provide support for coordination and planning of international cooperative agreements and testing programs with YMP. Participate in consensus development activities and information exchange	COOPERATIVE AGREEMENTS Continue participation in and support of Canadian Subsidiary Agreement #2, Swiss Project Agreement #3, and the Swedish Hard Rock Laboratory Agreement. Participate in consensus development activities and information exchange activities sponsored by international organizations and	COOPERATIVE AGREEMENTS Continue participation in and support of the Swedish Hard Rock Laboratory Agreement and project agreements with Spain, France, and Japan. Begin participation in and support of new Canadian Subsidiary Agreement No 3 and Swiss Project Agreement No 4. Provide support for coordination and planning of	COOPERATIVE AGREEMENTS Continue participation in and support of Canadian Subsidiary Agreement #3, Swiss Project Agreement #4, and project agreements with Spain, France, and Japan. Begin participation in and support of new Swedish Hard Rock Laboratory Agreement No 2. Provide support for coordination and planning of

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Int'l Waste Management Technology (Cont'd)	information exchange activities sponsored by international organizations and through bilateral agreements with other countries. Begin implementation of new information exchange agreement with Spain. Initiate participation in New Zealand geochemical and transport code validation study and CHEMVAL geochemical code validation exercises. Continue investigation of new initiatives with other countries, particularly Japan, France, Germany, and the Former Soviet Union. Continue discussions with Canada and Switzerland on areas for additional cooperative R&D activities to follow existing cooperative agreement tasks. Provide support for cooperative testing with France and the United Kingdom related to burn-up credit data for use in design and licensing waste transportation system elements. Provide partial support for participation in the Nuclear Energy Agency(NEA) Thermochemical Data Base Project.	activities sponsored by international organizations and through bilateral agreements with other countries. Continue discussions with Canada and Switzerland to identify potential subjects for future cooperative R&D activities and initiate discussions with Sweden. Re-establish a bilateral agreement with the Commission of European Communities. Continue support for participation in CHEMVAL exercises and natural analogue studies in New Zealand and evaluation of potential new natural analogue studies. Continue to support information exchange activities and discussions to develop cooperative activities with Spain. Continue to hold discussions with other countries to identify potential areas for cooperative R&D and establish bilateral agreements as needed, particularly with France, Germany, Japan and the former Soviet Union. ($6,090)	through bilateral agreements with other countries. Continue to finalize technical tasks for cooperative R&D activities with Canada and Switzerland for follow-on agreements with these countries and finalize agreements for start at beginning of FY 1997; continue discussions with Sweden on technical tasks for follow-on agreement for start at beginning of calendar year 1998. Initiate new mutually-beneficial cooperative activities with Japan, France, and Spain. Provide continued support for participation in the NEA Thermochemical Data Base Project and performance assessment model validation. Continue to evaluate opportunities for beneficial cooperative international activities on natural analogue studies, engineered barrier development, transportation and storage technology and public/institutional interactions. ($6,258)	international cooperative agreements and testing programs with YMP. Participate in consensus development activities and information exchange activities sponsored by international organizations and through bilateral agreements with other countries. Continue to finalize technical tasks for cooperative R&D activities with Sweden for a follow-on agreement for start at beginning of calendar year 1998. Continue to hold discussions with other countries to identify potential areas for cooperative R&D and establish bilateral agreements, as needed. Provide continued support for participation in the NEA Thermochemical Data Base Project and performance assessment model validation. Continue to evaluate opportunities for beneficial cooperative international activities on natural analogue studies, engineered barrier development, transportation and storage technology and public/institutional interactions.	international cooperative agreements and testing programs with YMP. Participate in consensus development activities and information exchange activities sponsored by international organizations and through bilateral agreements with other countries. Continue to hold discussions with other countries to identify potential areas for cooperative R&D and establish bilateral agreements, as needed. Provide continued support for participation in theThermochemical Data Base Project and performance assessment model validation. Continue to evaluate opportunities for beneficial cooperative international activities on natural analogue studies, engineered barrier development, transportation and storage technology and public/institutional interactions. ($6,655)

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Int'l Waste Management Technology (Cont'd)	($5,382)			($6,455)	
	$ 7,154	$ 7,382	$ 7,586	$ 7,824	$ 8,067
External Relations	Provide external relations and public outreach support for the Yucca Mountain Site Characteristic Project. ($1,936) Provide support for developing, implementing, maintaining, integrating and disseminating program-wide public, educational, and technical information materials through the OCRWM National Information Center; including audiovisual resources; video productions; refurbishing and updating all ten national exhibits; staffing 32 exhibits; presentations and briefings; INFOLINK; the teleconference for teachers; sponsoring two teacher workshops at UNLV; curriculum usage evaluation; sponsoring two educational speakers for the OCRWM speaker's bureau; the toll-free telephone response	Provide external relations and public outreach support for the Yucca Mountain Site Characteristic Project. ($1,371) Provide support for developing, implementing, maintaining, integrating and disseminating program-wide public, educational, and technical information materials through the OCRWM National Information Center; including audiovisual resources revised to reflect the PPA; video productions; exhibits; presentations and briefings; the quarterly OCRWM Standard Briefing; INFOLINK; the toll-free telephone response system; and such publications as the Science, Society and America's Nuclear Waste curriculum, at least two fact sheets, the quarterly and special editions of the OCRWM Bulletin, at least two	DIRECT YMP SUPPORT Provide external relations and public outreach support for the Yucca Mountain Site Characteristic Project. ($1,425) OVERALL PROGRAM SUPPORT Provide support for developing, implementing, maintaining, integrating and disseminating program-wide public, educational, and technical information materials through the OCRWM National Information Center; including audiovisual resources; video productions; exhibits; presentations and briefings; INFOLINK; the toll-free telephone response system; and such publications as the Science, Society and America's Nuclear Waste curriculum, fact sheets, the quarterly and special editions of the OCRWM Bulletin, brochures, and general	DIRECT YMP SUPPORT Provide external relations and public outreach support for the Yucca Mountain Site Characteristic Project. ($1,480) OVERALL PROGRAM SUPPORT Provide support for developing, implementing, maintaining, integrating and disseminating program-wide public, educational, and technical information materials through the OCRWM National Information Center; including audiovisual resources; video productions; exhibits; presentations and briefings; INFOLINK; the toll-free telephone response system; and such publications as the Science, Society and America's Nuclear Waste curriculum, fact sheets, the quarterly and special editions of the OCRWM Bulletin, brochures, and general	DIRECT YMP SUPPORT Provide external relations and public outreach support for the Yucca Mountain Site Characteristic Project. ($1,540) OVERALL PROGRAM SUPPORT Provide support for developing, implementing, maintaining, integrating and disseminating program-wide public, educational, and technical information materials through the OCRWM National Information Center; including audiovisual resources; video productions; exhibits; presentations and briefings; INFOLINK; the toll-free telephone response system; and such publications as the Science, Society and America's Nuclear Waste curriculum, fact sheets, the quarterly and special editions of the OCRWM Bulletin,

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Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
External Relations (Cont'd)	system; and such publications as the updated teacher's edition of the Science, Society and America's Nuclear Waste curriculum, fact sheets, the quarterly OCRWM Bulletin and two special MPC editions of the OCRWM Bulletin, brochures, and general and specific program materials, such as The Locations of Spent Nuclear Fuel. Develop and provide briefing and informational materials to the Director, Deputy Director, Rapid Response Team, and other program offices. Manage the inventory of materials and the implementation and program-wide integration of DOE communications policies and publications procedures. Conduct OCRWM's HBCU and Radioactive Waste Management Graduate Fellowship Programs. Prepare OCRWM's Annual Report to Congress and OCRWM's Chapter of the Secretary's Annual Report. Provide policy support and program coordination for the annual International High-Level Radioactive Waste Management Conference. Prepare	brochures, and general and specific program materials such as Answers to Questions. Develop and provide briefing and informational materials to the Director, Deputy Director, Rapid Response Team, and other program offices. Manage the inventory of materials, including production of the quarterly Document Distribution Report, and the implementation and program-wide integration of DOE communications policies and publications procedures. Deploy and test an integrated digitized electronic audiovisual capability. Conduct OCRWM's HBCU and Radioactive Waste Management Graduate Fellowship Programs. Prepare OCRWM's Annual Report to Congress and OCRWM's Chapter of the Secretary's Annual Report. Develop OCRWM Customer Service Implementation Strategy; begin implementation and evaluation activities. Ensure compliance with Safeguards and Security requirements; update and maintain Headquarters Element	and specific program materials. Develop and provide briefing and informational materials to the Director, Deputy Director, Rapid Response Team, and other program offices. Manage the inventory of materials and the implementation and program-wide integration of DOE communications policies and publications procedures. Conduct OCRWM's HBCU and Radioactive Waste Management Graduate Fellowship Programs. Prepare OCRWM's Annual Report to Congress and OCRWM's Chapter of the Secretary's Annual Report. Revise OCRWM Customer Service Plan to incorporate evaluation results. Ensure compliance with Safeguards and Security requirements; update and maintain Headquarters Element Security Agreement. Develop program's training plan; provide instruction to program employees and contractors on quality assurance and TQM training; establish and maintain records packages and personnel packages for employees	and specific program materials. Develop and provide briefing and informational materials to the Director, Deputy Director, Rapid Response Team, and other program offices. Manage the inventory of materials and the implementation and program-wide integration of DOE communications policies and publications procedures. Conduct OCRWM's HBCU and Radioactive Waste Management Graduate Fellowship Programs. Prepare OCRWM's Annual Report to Congress and OCRWM's Chapter of the Secretary's Annual Report. Update and maintain OCRWM Customer Service Plan. Ensure compliance with Safeguards and Security requirements; update and maintain Headquarters Element Security Agreement. Manage and implement training program; update course outlines, instruction guides, and lesson plans for quality assurance and TQM training; review Training Assignment Sheets and provide recommendations to managers on quality assurance and other	brochures, and general and specific program materials. Develop and provide briefing and informational materials to the Director, Deputy Director, Rapid Response Team, and other program offices. Manage the inventory of materials and the implementation and program-wide integration of DOE communications policies and publications procedures. Conduct OCRWM's HBCU and Radioactive Waste Management Graduate Fellowship Programs. Prepare OCRWM's Annual Report to Congress and OCRWM's Chapter of the Secretary's Annual Report. Update and maintain OCRWM Customer Service Plan. Ensure compliance with Safeguards and Security requirements; update and maintain Headquarters Element Security Agreement. Update and manage training program and processes; update course outlines, instruction guides, and lesson plans for quality assurance and TQM training; review Training Assignment Sheets and enter

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
External Relations (Cont'd)	draft OCRWM Customer Service Plan. Ensure compliance with Safeguards and Security requirements; update and maintain Headquarters Element Security Agreement. ($2,174) Administer cooperative agreements with native organizations, National Conference of State Legislatures (NCSL), National Congress of American Indians (NCAI), National Association of Regulatory Utility Commissioners (NARUC) and the League of Women Voters (LWV). Continue socioeconomic efforts to support Yucca Mountain Environmental Assessment and Environmental Impact Study. Continue education programs (i.e., Fellowships, HBCU, University Outreach, Professional Society Education Outreach). ($732)	Security Agreement. Develop systematic approach to training; develop course outlines, instruction guides, and lesson plans for quality assurance training, provide classroom instruction; process quality assurance training and privileged records; open, maintain, and close records packages in the Quality Records Center; maintain personnel training records; prepare monthly training schedule; develop and maintain a training tracking system; establish scope, direction, coordination, planning and management of the organization's Career Development Program; develop Individual Development Plans; conduct job analysis and skills inventory; prepare positions descriptions and performance plans; design and develop databases to improve human resources efficiency; develop and provide instruction on Total Quality Management (TQM) training; develop and facilitate TQM processes; and provide	performing work to the Quality Assurance Requirements Document; manage career development program, expanding program to create specific enhancement programs within the career development program; establish and implement "mentoring" program; develop standardized position descriptions and, to the extend possible, standardized performance elements and standards; develop position descriptions; develop Individual Development Plans; prepare EEO/Affirmative Action Plan; modify human resources databases and develop database to track requisitions; develop and coordinate monthly training schedule of DOE and program courses; administer and maintain information and training tracking system. ($2,414) COOPERATIVE AGREEMENTS Administer cooperative agreements with native organizations, (NCSL), (NCAI), (NARUC) and the (LWV). Continue socioeconomic efforts to support Yucca (EA) and (EIS). Continue	training required; individualize TQM training for RW employees; prepare monthly training schedule; provide instruction on quality assurance and TQM training; input information into the training tracking system; prepare position descriptions and performance plans and accompanying documentation, i.e., ranking factors, selective placement factors, etc.; prepare annual EEO/Affirmative ction Plan; establish new records packages and maintain existing records in the Quality Records Center; and prepare for briefings and presentations, graphics, slides, talking points and other briefing tools and certificates for award presentations. ($2,465) COOPERATIVE AGREEMENTS Administer cooperative agreements with native organizations, (NCSL), (NCAI), (NARUC) and the (LWV). Continue socioeconomic efforts to support Yucca (EA) and (EIS). Continue education programs (i.e., Fellowships,	information into training tracking system; prepare monthly training schedule; provide instruction on quality assurance and TQM training; prepare position descriptions, performance plans, ranking factors, selective placement factors, and statement of differences; prepare annual EEO/Affirmative Action Plan; establish new records packages and maintain existing records in the Quality Records Center; provide graphics support; evaluate processes and systems to ensure their effectiveness; and manage the processing of information into the records packages. ($2,514) COOPERATIVE AGREEMENTS Administer cooperative agreements with native organizations, (NCSL), (NCAI), (NARUC) and the (LWV). Continue socioeconomic efforts to support Yucca (EA) and (EIS). Continue education programs (i.e., Fellowships, HBCU, University Outreach, Professional Society Education Outreach). ($1,570)

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III Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
External Relations (Cont'd)		graphics support for presentations, certificates and awards. ($2,381) Administer cooperative agreements with native organizations, (NCSL), (NCAI), (NARUC) and the (LWV). Continue socioeconomic efforts to support Yucca (EA) and (EIS). Continue education programs (i.e., Fellowships, HBCU, University Outreach, Professional Society Education Outreach). ($1,395)	education programs (i.e., Fellowships, HBCU, University Outreach, Professional Society Education Outreach). ($1,450)	HBCU, University Outreach, Professional Society Education Outreach). ($1,510)	
	$ 4,949	$ 5,147	$ 5,289	$ 5,455	$ 5,624
Program Control and Administration	Perform required Nuclear Waste Fund financial management activities and provide monthly investment recommendations. Provide accounting and NWF property management services. Conduct annually an independent audit of NWF financial statements. Provide assistance in developing responses to GAO and DOE IG audit reports and inquiries. Continued Headquarters (HQ)/field training activities for OCRWM	Perform required Nuclear Waste Fund financial management activities and provide monthly investment recommendations. Provide accounting and NWF property management services. Conduct annually an independent audit of NWF financial statements. Provide assistance in developing responses to GAO and DOE IG audit reports and inquiries. Continue HQ/field training activities for OCRWM and OCRWM	DIRECT YMP SUPPORT OVERALL PROGRAM SUPPORT Perform required Nuclear Waste Fund financial management activities and provide monthly investment recommendations. Provide accounting and NWF property management services. Conduct annually an independent audit of NWF financial statements. Provide assistance in developing responses to GAO and DOE IG audit reports and inquiries.	DIRECT YMP SUPPORT OVERALL PROGRAM SUPPORT Perform required Nuclear Waste Fund financial management activities and provide monthly investment recommendations. Provide accounting and NWF property management services. Conduct annually an independent audit of NWF financial statements. Provide assistance in developing responses to GAO and DOE IG audit reports and inquiries.	DIRECT YMP SUPPORT OVERALL PROGRAM SUPPORT Perform required Nuclear Waste Fund financial management activities and provide monthly investment recommendations. Provide accounting and NWF property management services. Conduct annually an independent audit of NWF financial statements. Provide assistance in developing responses to GAO and DOE IG audit reports and inquiries.

III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Program Control and Administration (Cont'd)	and OCRWM contractor personnel. Continued support for Nuclear Waste Fund (NWF) management activities, including development and implementation of investment strategies; annual projections of receipts and interest earnings; and OCRWM budget preparation and execution activities. Initiated revision of Project Decision Schedule (PDS) to reflect changes in the Program schedule that impact on other Federal agencies. Continued to provide accounting, independent auditing, and NWF property management services. Established and maintained program control system and provided guidance and oversight for development and maintenance of (Associate Director/ Office Director) AD/OD annual workplans and performance measurement baselines. Maintained Program Work Breakdown Structure (WBS). Initiated revision of Program Cost and Schedule Baseline (PCSB) to reflect program evolution/ redirection. Initiated FY 1994 TSLCC analysis and updated cost	contractor personnel. Continue support for NWF management activities, including development and implementation of investment strategies; annual projections of receipts and interest earnings; and OCRWM budget preparation and execution activities. Complete revision of PDS to reflect changes in the Program schedule that impact on other Federal agencies; coordinate changes with affected agencies. Continue to provide accounting, independent auditing, and NWF property management services. Continue to maintain program control system and provide guidance and oversight for development and maintenance of AD/OD annual workplans and performance measurement baselines. Maintain and revise Program WBS as necessary to reflect program evolution/ redirection. Oversee maintenance of YMP and MRS Project WBS's. Complete revision of PCSB to reflect program evolution/redirection. Complete FY 1994 TSLCC analysis and initiate FY 1995 TSLCC analysis; update cost models.	Continue HQ/field training activities for OCRWM and OCRWM contractor personnel. Continue support for NWF management activities, including development and implementation of investment strategies. Continue to provide accounting, independent auditing, and NWF property management services. Continue annual projections of receipts and interest earnings and OCRWM budget preparation and execution activities. Update/revise PDS as necessary to reflect changes in the Program schedule that impact on other Federal agencies; coordinate changes with affected agencies. Continue to maintain program control system and provide guidance and oversight for development and maintenance of AD/OD annual workplans and performance measurement baselines. Revise Program WBS as necessary to reflect programmatic changes. Oversee maintenance of YMP and MRS Project WBS's. Update/revise PCSB as necessary to reflect program evolution/redirection.	Continue HQ/field training activities for OCRWM and OCRWM contractor personnel. Continue support for NWF management activities, including development and implementation of investment strategies; annual projections of receipts and interest earnings; and OCRWM budget preparation and execution activities. Update/revise PDS as necessary to reflect changes in the Program schedule that impact on other Federal agencies; coordinate changes with affected agencies. Continue to provide accounting, independent auditing, and NWF property management services. Continue to maintain program control system and provide guidance and oversight for development and maintenance of AD/OD annual workplans and performance measurement baselines. Maintain Program WBS. Oversee maintenance of YMP and MRS Project WBS's. Update/revise PCSB as necessary to reflect program evolution/ redirection. Complete FY 1996 TSLCC and initiate FY 1997 TSLCC	Continue HQ/field training activities for OCRWM and OCRWM contractor personnel. Continue support for NWF management activities, including development and implementation of investment strategies; annual projections of receipts and interest earnings; and OCRWM budget preparation and execution activities. Update/revise PDS as necessary to reflect changes in the Program schedule that impact on other Federal agencies; coordinate changes with affected agencies. Continue to provide accounting, independent auditing, and NWF property management services. Continue to maintain program control system and provide guidance and oversight for development and maintenance of AD/OD annual workplans and performance measurement baselines. Maintain Program WBS. Oversee maintenance of YMP and MRS Project WBS's. Update/revise PCSB as necessary to reflect program evolution/ redirection. Complete FY 1997 TSLCC and initiate FY 1998 TSLCC

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III Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Program Control and Administration (Cont'd)	models. Continued to provide ad hoc support for Yucca Mountain Site Characterization Project (YMP) and Monitored Retrievable Storage (MRS) Project Energy System Acquisition Advisory Board (ESAAB) and independent cost estimate (ICE) reviews. Provide administrative support services, including employee development, printing, reproduction, office space, equipment rental, postage, telecommunications, materials, and supplies. ($5,059)	Continue to provide support for YMP and MRS Project ESAAB and ICE reviews. Provide administrative support services, including employee development, printing, reproduction, office space, equipment rental, postage telecommunications, materials, and supplies. ($5,658)	Complete FY 1995 TSLCC and initiate FY 1996 TSLCC analysis; update cost models. Continue to provide support for YMP and MRS Project ESAAB and ICE reviews. Provide administrative support services, including employee development, printing, reproduction, office space, equipment rental, postage telecommunications, materials, and supplies. ($6,222)	analysis; update cost models. Continue to provide support for YMP and MRS Project ESAAB and ICE reviews. Provide administrative support services, including employee development, printing, reproduction, office space, equipment rental, postage telecommunications, materials, and supplies. ($8,830)	analysis; update cost models. Continue to provide support for YMP and MRS Project ESAAB and ICE reviews. Provide administrative support services, including employee development, printing, reproduction, office space, equipment rental, postage telecommunications, materials, and supplies. ($9,044)
	$ 7,384	$ 8,078	$ 10,092	$ 12,011	$ 11,769

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management					
Information Management	Support Information Resources Management (IRM) compliance oversight and policy functions to ensure compliance and consistency in defining, controlling and supporting the development of information resources and records activities across the program and contractor locations. Support the development and implementation of OCRWM IRM planning; development or updating of up to 20 IRM plans and strategies; and the establishment, implementation, and maintenance of a program-wide information resources architecture. Support the planning, acquisition, operation, security and maintenance of OCRWM headquarters andcontractor computing, program-wide videoconference services, and local and wide area communication networks. Provide for computer facilities management, database administration, data	Support Information Resources Management (IRM) compliance oversight and policy functions to ensure compliance and consistency in defining, controlling and supporting the development of information resources and records activities across the program and contractor locations. Support the development and implementation of OCRWM IRM planning; development or updating of up to 20 IRM plans and strategies; and the establishment, implementation, and maintenance of a program-wide information resources architecture. Support the planning, acquisition, operation, security and maintenance of OCRWM headquarters and contractors computing, program-wide video conference services, and local and wide area communication networks. Provide for computer facilities management, database administration, data backup and recovery,	OVERALL PROGRAM SUPPORT Support Information Resources Management (IRM) compliance oversight and policy functions to ensure compliance and consistency in defining, controlling and supporting the development of information resources and records activities across the program and contractor locations. Support the development and implementation of OCRWM IRM planning; development or updating of up to 20 IRM plans and strategies; and the establishment, implementation, and maintenance of a program-wide information resources architecture. Support the planning, acquisition, operation, security and maintenance of OCRWM headquarters and contractors computing, program-wide video conference services, and local and wide area communication networks. Provide for computer facilities management, database	OVERALL PROGRAM SUPPORT Support Information Resources Management (IRM) compliance oversight and policy functions to ensure compliance and consistency in defining, controlling and supporting the development of information resources and records activities across the program and contractor locations. Support the development and implementation of IRM OCRWM planning; development or updating of up to 20 IRM plans and strategies; and the establishment, implementation, and maintenance of a program-wide information resources architecture. Support the planning, acquisition, operation, security and maintenance of headquarters computing, program-wide video conference services, and local and wide area communication networks. Provide for computer facilities management, database administration, data	OVERALL PROGRAM SUPPORT Support Information Resources Management (IRM) compliance oversight and policy functions to ensure compliance and consistency in defining, controlling and supporting the development of information resources and records activities across the program and contractor locations. Support the development and implementation of OCRWM IRM planning; development or updating of up to 20 IRM plans and strategies; and the establishment, implementation, and maintenance of a program-wide information resources architecture. Support the planning, acquisition, operation, security and maintenance of headquarters computing, program-wide video conference services, and local and wide area communication networks. Provide for computer facilities management, database administration, data

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management (Cont'd)	backup and recovery, system performance monitoring, and technology assessment Provide user support, including standardized office automation, help desk problem response, delivery of up to 80 user training sessions, development of up to 8 new training courses and 2 computer-based training courses. Support software and database development and maintenance services in support of Headquarters information requirements. Develop technical specifications to deploy the systems via the Headquarters Local Area Network. Proceed with the development of InfoSTREAMS. Initiate the development of functionality with the addition of expert system capabilities for document relevance analysis, document disposition, records retention, and automated dissemination based on user interest profiles. Provide technical review for the Automated Requirements Management System (ARMS) and Configuration Information System	system performance monitoring, and technology assessment. Provide user support, including standardized office automation, help desk problem response, delivery of up to 80 user training sessions, and development of up to 8 new training courses and 2 computer-based training courses. Support software and database development and maintenance services in support of Headquarters information requirements. Develop technical specifications to deploy the systems on the Headquarters Local Area Network. Based on the deployment plan recommendation, deploy the Executive Desktop, to provide reference and access of standard office automation and database applications. Provide technical review for the Automated Requirements Management System (ARMS) and Configuration Information (CIS) software project activities to ensure compliance with the IRM architecture.	administration, data backup and recovery, system performance monitoring, and technology assessment. Provide user support, including standardized office automation, help desk problem response, delivery of up to 80 user training sessions, and development of up to 8 new training courses and 2 computer-based training courses. Support software and database development and maintenance services in support of Headquarters information requirements. Develop technical specifications to deploy the systems on the Headquarters Local Area Network. Based on the deployment plan recommendation, deploy the Executive Desktop, to provide reference and access of standard office automation and database applications. Provide technical review for the Automated Requirements Management System (ARMS) and Configuration Information (CIS) software project activities to ensure	backup and recovery, system performance monitoring, and technology assessment. Provide user support, including standardized office automation, help desk problem response, delivery of up to 80 user training sessions, and development of up to 8 new training courses and 2 computer-based training courses. Support software and database development and maintenance services in support of Headquarters information requirements. Develop technical specifications to deploy the systems on the Headquarters Local Area Network. Provide technical review for the Automated Requirements Management System (ARMS) and Configuration Information (CIS) software project activities to ensure compliance with the IRM architecture. Operate records facilities, providing for the capture, indexing, storage, retrieval, and disposition of OCRWM	backup and recovery, system performance monitoring, and technology assessment. Provide user support, including standardized office automation, help desk problem response, delivery of up to 80 user training sessions, and development of up to 8 new training courses and 2 computer-based training courses. Support software and database development and maintenance services in support of Headquarters information requirements. Develop technical specifications to deploy the systems on the Headquarters Local Area Network. Provide technical review for the Automated Requirements Management System (ARMS) and Configuration Information (CIS) software project activities to ensure compliance with the IRM architecture. Operate records facilities, providing for the capture, indexing, storage, retrieval, and disposition of OCRWM

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III Program Management (Cont'd):
Information Management (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management (Cont'd)	(CLS) software project activities to ensure compliance with the IRM architecture. Provide software operation and maintenance support for the VAX-based Regulatory Tracking System. Provide software support services to sustain reliable operation of the installed base of scientific applications and the Interim Records Management System. Operate records facilities, providing for the capture, indexing, storage, retrieval, and disposition of OCRWM Program records in accordance with applicable NARA and DOE records requirements and NRC licensing requirements. Provide for the operation of the OCRWM Correspondence Control Unit. Support the evaluation and operations of records imaging as a replacement for current microfilm and blow-back operations.	Operate records facilities, providing for the capture, indexing, storage, retrieval, and disposition of OCRWM Program records in accordance with applicable NARA and DOE records requirements and NRC licensing requirements. Provide for the operation of the OCRWM Correspondence Control Unit. Support the evaluation and operations of records imaging as a future replacement for current microfilm and blow-back operations. Proceed with the conversion of licensing-relevant document backlog per NRC requirements (scan documents, create images, convert to text and index). The retrospective conversion process is planned through FY 1997	compliance with the IRM architecture. Operate records facilities, providing for the capture, indexing, storage, retrieval, and disposition of OCRWM Program records in accordance with applicable NARA and DOE records requirements and NRC licensing requirements. Provide for the operation of the OCRWM Correspondence Control Unit. Support the evaluation and operations of records imaging as a future replacement for current microfilm and blow-back operations. Proceed with the conversion of licensing-relevant document backlog per NRC requirements (scan documents, create images, convert to text and index). The retrospective conversion process is planned through FY 1997	Program records in accordance with applicable NARA and DOE records requirements and NRC licensing requirements. Provide for the operation of the OCRWM Correspondence Control Unit. Support the evaluation and operations of records imaging as a future replacement for current microfilm and blow-back operations. Proceed with the conversion of licensing-relevant document backlog per NRC requirements (scan documents, create images, convert to text and index). The retrospective conversion process is planned through FY 1997.	Program records in accordance with applicable NARA and DOE records requirements and NRC licensing requirements. Provide for the operation of the OCRWM Correspondence Control Unit. Support the evaluation and operations of records imaging as a future replacement for current microfilm and blow-back operations. Proceed with the conversion of licensing-relevant document backlog per NRC requirements (scan documents, create images, convert to text and index).

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III Program Management (Cont'd)
Information Management (Cont'd)

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Information Management (Cont'd)	$ 18,071	$ 15,114	$ 15,781	$ 15,966	$ 15,139
Licensing Support System	No Activity	Beginning in FY 1995 LSS activities have been transfered to the Yucca Mountain Site Characterbility Project Information Resource Management			
	$ 0	$ 0	$ 0	$ 0	$ 0
Subtotal, Information Management	$ 18,071	$ 15,114	$ 15,781	$ 15,966	$ 15,139
Contract Business Management	Provide Headquarters Support Services Contractor operating and administrative expenses including office space, office supplies, relocation, reproduction, maintenance of government furnished property, recruiting, freight and postage, publications, computer hardware and software maintenance, and LAN support. Provide accounting and cost control, contract/subcontract management, purchasing, property management, maintenance of a technical information center, and control and management of contractor records Prepare monthly	Provide Headquarters Support Services Contractor operating and administrative expenses including office space, office supplies, relocation, reproduction, maintenance of government furnished property, recruiting, freight and postage, publications, computer hardware and software maintenance, and LAN support. Provide accounting and cost control, contract/subcontract management, purchasing, property management, maintenance of a technical information center, and control and management of contractor records. Prepare monthly	OVERALL PROGRAM SUPPORT Provide Headquarters Support Services Contractor operating and administrative expenses including office space, office supplies, relocation, reproduction, maintenance of government furnished property, recruiting, freight and postage, publications, computer hardware and software maintenance, and LAN support. Provide accounting and cost control, contract/subcontract management, purchasing, property management, maintenance of a technical information center, and control and management of	OVERALL PROGRAM SUPPORT Provide Headquarters Support Services Contractor operating and administrative expenses including office space, office supplies, relocation, reproduction, maintenance of government furnished property, recruiting, freight and postage, publications, computer hardware and software maintenance, and LAN support. Provide accounting and cost control, contract/subcontract management, purchasing, property management, maintenance of a technical information center, and control and management of	OVERALL PROGRAM SUPPORT Provide Headquarters Support Services Contractor operating and administrative expenses including office space, office supplies, relocation, reproduction, maintenance of government furnished property, recruiting, freight and postage, publications, computer hardware and software maintenance, and LAN support. Provide accounting and cost control, contract/subcontract management, purchasing, property management, maintenance of a technical information center, and control and management of

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
Contract Business Management (Cont'd)	contractor performance reports and provide a monthly Task Plan variance report. Provide senior level advisory support to the Director's Office on Program activities, including organizational, human resources, and procedural issues.	contractor performance reports and provide a monthly Task Plan variance report. Provide senior level advisory support to the Director's Office on Program activities, including organizational, human resources, and procedural issues.	contractor records. Prepare monthly contractor performance reports and provide a monthly Task Plan variance report. Provide senior level advisory support to the Director's Office on Program activities, including organizational, human resources, and procedural issues.	contractor records. Prepare monthly contractor performance reports and provide a monthly Task Plan variance report. Provide senior level advisory support to the Director's Office on Program activities, including organizational, human resources, and procedural issues.	contractor records. Prepare monthly contractor performance reports and provide a monthly Task Plan variance report. Provide senior level advisor support to the Director's Office on Program activities, including organizational, human resources, and procedural issues.
	$ 2,471	$ 2,570	$ 2,641	$ 2,724	$ 2,808
First Repository Support	Provide Headquarters support to develop planning documents and document reviews for first repository activities not included in the Yucca Mountain Program (YMP) Major Systems Acquisition (MSA).	Provide Headquarters support to develop planning documents and document reviews for first repository activities not included in the YMP MSA.	DIRECT STORAGE/TRANSPORTATION Provide Headquarters support to develop planning documents and document reviews for first repository activities not included in the YMP MSA.	DIRECT STORAGE/TRANSPORTATION Provide Headquarters support to develop planning documents and document reviews for first repository activities not included in the YMP MSA.	DIRECT STORAGE/TRANSPORTATION Provide Headquarters support to develop planning documents and document reviews for first repository activities not included in the YMP MSA.
	$ 866	$ 901	$ 926	$ 955	$ 984
MRS Project Support	Provide Headquarters support to develop planning documents and document reviews for spent-fuel storage and transportation activities.	Provide Headquarters support to develop planning documents and document reviews for spent-fuel storage and transportation activities.	DIRECT YMP SUPPORT Provide Headquarters support to develop planning documents and document reviews for spent-fuel storage and transportation activities.	DIRECT YMP SUPPORT Provide Headquarters support to develop planning documents and document reviews for spent-fuel storage and transportation activities.	DIRECT YMP SUPPORT Provide Headquarters support to develop planning documents and document reviews for spent-fuel storage and transportation activities.

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998
MMS Project Support (Cont'd)	$ 1,813	$ 1,886	$ 1,938	$ 1,999	$ 2,060
Program Management	$ 63,265	$ 63,160	$ 68,758	$ 75,337	$ 77,457

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Alaska Power Administration

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Operation and Maintenance, Alaska Power Administration

For necessary expenses of operation and maintenance of projects in Alaska and of marketing electric power and energy, [$6,494,000] $4,260,000, to remain available until expended.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ALASKA POWER ADMINISTRATION
(dollars in thousands)

OVERVIEW

OPERATION AND MAINTENANCE

MISSION

Alaska Power Administration (APA) will continue to encourage economic and industrial development in Alaska, and repay the taxpayers' investment by providing and marketing reliable hydroelectric power generated at its facilities. We will market the power at the lowest rates possible, and operate and maintain our generation and transmission facilities in a safe and environmentally-sensitive manner consistent with sound business principles.

APA's facilities are the 78 megawatt (MW) Snettisham Project near Juneau and the 30 MW Eklutna Project near Anchorage. APA markets wholesale power to four Alaskan utilities, providing approximately 5% of Anchorage's and 80% of Juneau's electric power requirements. The project facilities include dams, reservoirs, powerplants, transmission systems, and necessary maintenance facilities.

OBJECTIVES

Program objectives in operating, maintaining, and marketing power from Eklutna and Snettisham are to:

Maximize energy production in an efficient, reliable, safe, and environmentally-sensitive manner for our customers, and minimize long-term costs while protecting the Federal investment.

Perform all necessary maintenance to project facilities, including scheduling and installing major replacements and improvements.

Market power generated in accordance with authorizing legislation. Continue full utilization of Projects' energy and peaking capabilities.

Continue to enhance public use of project lands and facilities via visitation, reservoir recreation, cooperation with Alaska Department of Fish and Game in salmon production at Snettisham, and cooperation with the Cook Inlet Aquaculture Association's fish hatchery and Municipality of Anchorage's water supply projects at Eklutna.

Continue full range of administrative management services in support of program objectives.

DIVESTITURE

Although DOE and APA are continuing to pursue the completion of the sale of APA assets to the State of Alaska and a consortium of local interests, continued operation and maintenance of the projects while under Federal ownership remains the priority. As such, the FY 1996 request for funding and personnel ceiling assumes continuation of the operation, maintenance, and power marketing programs at APA. If Congressional authorization for the sale is received and closeout of APA activities is completed before the end of FY 1996, expenditures for the year could be below the request.

EMERGENCY FUND

The FY 1996 request assumes $200,000 in emergency funds appropriated by Congress in FY 1984 to ensure continuity of service will remain available in FY 1996 for that purpose. In the event emergency funds are necessary in FY 1996, immediate restoration of the fund will be requested as funding constraints over the last few years have created a backlog of maintenence requirements and have reduced our financial flexibility to respond to unplanned events.

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ORGANIZATIONAL STREAMLINING PLANS

The APA streamlining efforts have resulted in a 50% reduction of supervision, reduced accountant support positions by 30%, and are currently reducing acquisition specialist positions by 25%. APA has remained within the allotted FTE ceiling.

Based upon the historical high level of turnover and further office automation efforts that will decrease clerical support staff needs, APA will achieve the following FTE target numbers through attrition:

FY 95	FY 96	FY 97	FY 98	FY 99
35	35	34	33	32

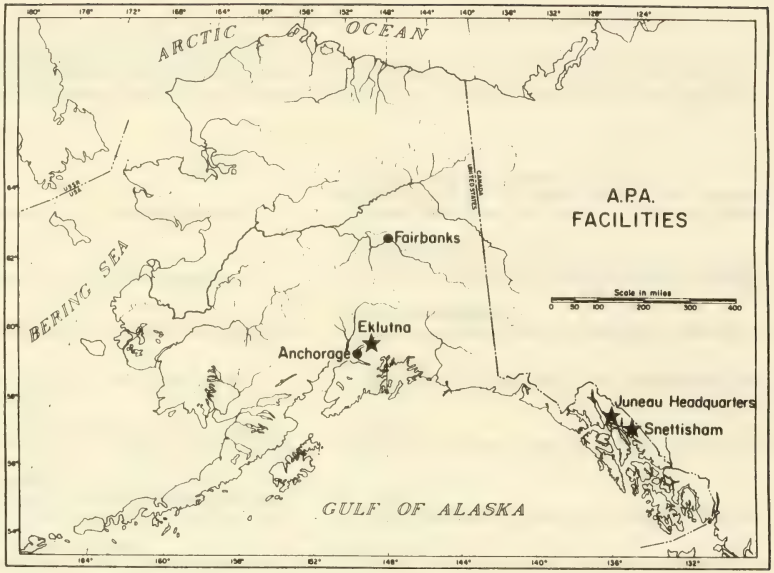
DEPARTMENT OF ENERGY (DOE)

Alaska Power Administration

OUTPUT	OUTCOME
Debt service coverage ratio NOTE: Can only be computed at close of fiscal year; monthly, quarterly not possible.	To establish rates sufficient to make full and timely repayment to the U.S. Treasury.
Cumulative principle payments as a % of total Federal investment NOTE: Can only be computed at close of fiscal year; monthly, quarterly not possible.	To establish rates sufficient to make full and timely repayment to the U.S. Treasury.
Percent variance of actual from planned annual principle payments NOTE: Can only be computed at close of fiscal year; monthly, quarterly not possible.	To establish rates sufficient to make full and timely repayment to the U.S. Treasury.
Net cash flow to Treasury NOTE: Can be computed monthly.	To establish rates sufficient to make full and timely repayment to the U.S. Treasury.
Total recordable case rate NOTE: Can only be computed quarterly.	To maintain the health and safety of all employees in performing their work-related responsibilities.
Generation reliability index NOTE: Can be computed monthly.	To develop and achieve the operation of a reliable, low-cost, environmentally-sound generation system which facilitates competitive and efficient wholesale supply markets.
Transmission reliability index NOTE: Can be computed monthly.	To develop and achieve the operation of a reliable, low-cost, environmentally-sound transmission system which facilitates competitive and efficient wholesale supply markets.

PROGRAM EVALUATION

APA's program evaluation is measured by the Outputs and Outcomes listed above. For FY 1994 data for each output is collected at it's own frequency (i.e. some can only be obtained monthly, quarterly or annually). This data is compared with past data to insure APA outputs and outcomes are appropriate. The results are published in APA's annual report. At this point in time APA will continue to look for improvements, but will at the least continue the above for FY 1995 and FY 1996 as a minimum.


ARCTIC OCEAN
BERING SEA
GULF OF ALASKA
CANADA
UNITED STATES
A.P.A.
FACILITIES
Scale in miles
0 50 100 200 300 400
Fairbanks
Eklutna
Anchorage
Juneau Headquarters
Snettisham

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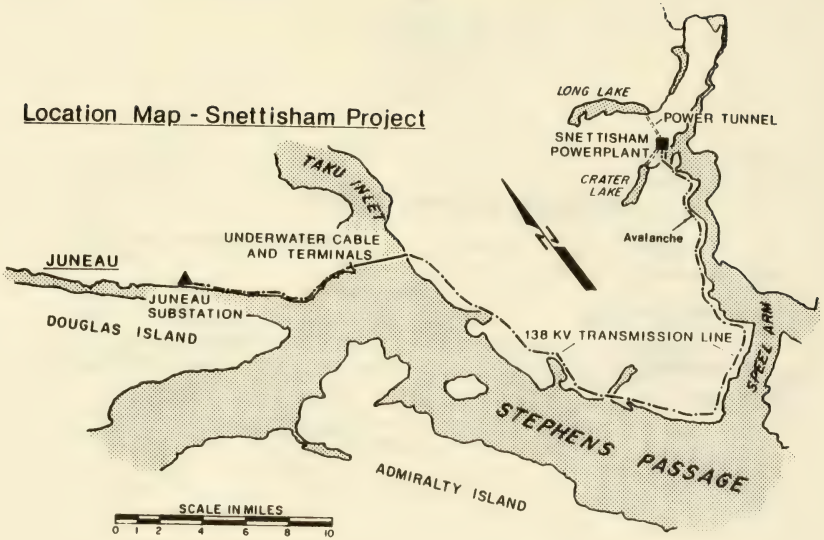
Location Map - Snettisham Project



Location Map-Eklutna Project

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ALASKA POWER ADMINISTRATION
(dollars in thousands)

LEAD TABLE

ALASKA POWER ADMINISTRATION

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operation and Maintenance					
Operating Expenses	$ 4,010	$ 6,494	$ 0	$ 6,494	$ 4,260
TOTAL	$ 4,010	$ 6,494	$ 0	$ 6,494	$ 4,260
Summary					
Operating Expenses	$ 4,010	$ 6,494	$ 0	$ 6,494	$ 4,260
Total Program	$ 4,010	$ 6,494	$ 0	$ 6,494	$ 4,260
Staffing FTE's	33	35	0	35	35

Authorizations:
P.L. 95-91, "Department of Energy Organization Act" (1977), Section 302

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ALASKA POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

OPERATION AND MAINTENANCE

FY 1995 Appropriation	$ 6,494
- Adjustment - General reduction	0
FY 1995 Adjusted	$ 6,494
- Transfer -	0
FY 1995 Comparable	$ 6,494
Operation and Maintenance	
- Major Replacements request decreased due to Eklutna primary rewind contract being awarded in FY 95 and therefore reduced funds are needed in FY 1996.	-2,390
- Administrative Services request increased due to inflation in personnel costs	+32
- Power Generation and Transmission request increased due to inflation of personnel costs and addition of drafting services in APA headquarters.	+124
Use of Unobligated Balances	
- Use of Unobligated Balances	0
FY 1996 Congressional Budget Request	$ 4,260

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ALASKA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

OPERATION AND MAINTENANCE

I. Preface: Operation and Maintenance

Alaska Power Administration's (APA) operation and maintenance (O&M) program helps ensure that our projects generate and transmit reliable electric power in a clean and environmentally safe, cost-effective manner. APA achieves this by maintaining its power plants and transmission lines at or above industry standards, mitigation of adverse environmental impacts by design and monitoring programs, and performing clean-up of existing problems. Training is provided in the areas of safety and environmental matters so that our staff can perform at their best in a cost efficient manner.

As of September 30, 1994, the projects represent a cumulative Federal investment, including replacements, of $205,600,000. Through FY 1994, $42,000,000 has been repaid in addition to $79,400,000 in interest. FY 1996 revenues from operations are estimated at nearly $11,160,000.

Equipment replacements, such as transformers, circuit breakers, etc. are scheduled for replacement based on their normal service life, availability of parts, and current maintenance costs.

DIVESTITURE

Although DOE and APA are continuing to pursue the completion of the sale of APA assets to the State of Alaska and a consortium of local interests, continued operation and maintenance of the projects while under Federal ownership remains the priority. As such, the FY 1996 request for funding and personnel ceiling assumes continuation of the operation, maintenance, and power marketing programs at APA. If Congressional authorization for the sale is received and closeout of APA activities is completed before the end of FY 1996, expenditures for the year could be below the request.

EMERGENCY FUND

The FY 1996 request assumes $200,000 in emergency funds appropriated by Congress in FY 1984 to ensure continuity of service will remain available in FY 1996 for that purpose. In the event emergency funds are necessary in FY 1996, immediate restoration of the fund will be requested as funding constraints over the last few years have created a backlog of maintenance requirements and have reduced our financial flexibility to respond to unplanned events.

EKLUTNA UNIT WINDING REPLACEMENT PROGRAM

The FY 1995 Major Replacement program was increased $2,700,000 to provide for the procurement of replacement stator cores, stator windings, and field windings for the aging Eklutna Project generators. The stator windings, cores, and field windings are essential to the generator's operation.

The FY 1996 program includes $400,000 to continue the Eklutna Unit Winding replacement program. This work includes final re-assembly of the generator units and needed associated mechanical and electrical acceptance testing. The units cannot be returned to in-service status without this work being performed. Eklutna unit winding replacement program began in FY 1995 and will continue through FY 1997. Completion of the replacement windings is necessary for continued long-term operation of the plant and is vital for meeting the 50 year repayment requirement.

OTHER NEAR TERM SIGNIFICANT MAINTENANCE

Most sections of the Snettisham Project transmission line right of way have not been cleared within the last 20 years. The underbrush is endangering the reliability of the transmission line. The FY 1996 target level includes minimal funding to continue for clearing a section of the transmission line where underbrush growth is most severe.

In the fourth quarter of FY 1994, the Snettisham transmission line reliability was threatened by a major landslide which required $850,000 to relocate one tower and modify one adjacent tower. As a result of this financial demand occurring near the end of the fiscal year a total of $110,000 of planned operation and maintenance activities have been deferred. The FY 1996 target level includes minimal funding to continue our maintenance backlog reduction program.

II. A. Summary Table: Operation and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Major Replacements	$ 845	$ 3,231	$ 841	$ 2,390
Administrative Services	1,084	1,180	1,212	-32
Power Generation and Transmission	2,081	2,083	2,207	-124
Total, Operation and Maintenance	$4,010	$ 6,494	$ 4,260	$ 2,234

II. B. Laboratory and Facility Funding Table: Operation and Maintenance

All Other	$ 4,010	$ 6,494	$ 4,260	$ 2,234
Total, Operation and Maintenance	$ 4,010	$ 6,494	$ 4,260	$ 2,234

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Operation and Maintenance			
Major Replacements	Continued maintenance, replacement and improvement programs at both the Eklutna and Snettisham Project facilities to maintain the reliability, efficiency, and safety of the power systems. At Eklutna, procured the second main power transformer and made conservation and environmental improvements. At Snettisham, made electrical equipment replacement and upgrades and environmental improvements. Snettisham also experienced severe ground faults on the 138 Kv transmission line that resulted in relay installation and equipment testing work. Extensive work was also performed on the Snettisham transmission line to relocate a tower out of an active landslide area. As a result of this financial demand occurring near the end of the fiscal year a total of $110,000 of planned operation and maintenance activities have been deferred.	Continuation of most maintenance, replacement, and improvement programs at both Eklutna and Snettisham Project facilities to maintain the reliability, efficiency, and safety of the power systems. The priority activities planned are the installation of the Eklutna main power transformers and procurement of replacement stator cores, stator windings and field windings and Snettisham line clearing. Continuation of maintenance backlog reduction program.	The request provides for maintenance, replacements and improvements at each of the project facilities to maintain the efficiency, reliability, and safety of the power systems. At Eklutna, the request provides for the continuation of the Eklutna Winding replacement. The windings are essential to the long term continued operation and successful repayment of the project. At Snettisham, the request provides for underbrush clearing of the transmission line that is endangering the reliability of power deliveries. Continuation of maintenance backlog reduction program.
	$ 845	$ 3,231	$ 841
Administrative Services	Continued full range of administrative and management services in support of power operation, maintenance, and marketing functions, including the Administrator's Office and staff work in support of the proposed divestiture. Supported the environmental safety and health programs.	Provides the full range of administrative and management services in support of power operation, maintenance, and marketing functions. This includes the Administrator's Office and staff work in support of the proposed divestiture. The request is sufficient to ensure compliance with the CFO Act requirements. The request also provides sufficient staffing for the environmental, safety, and health programs required to bring APA into compliance with current local, State, and Federal regulations and begin conversion to the next consolidated Financial Management System for the Power Marketing Administrations.	The request provides for the full range of administrative and management services in support of power operation, maintenance, and marketing functions. This includes the Administrator's Office and staff work in support of the proposed divestiture. The request also provides for management of the environmental, safety, and health programs at APA. The request is sufficient to ensure compliance with the CFO Act requirements.
	$ 1,084	$ 1,180	$ 1,212

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III. Operation and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Power Generation and Transmission	Continued normal operation, maintenance, and power marketing programs for both Eklutna and Snettisham projects, including the new Crater Lake addition. Marketed an estimated 397 GWH with total proprietary receipts of $9,474,000. Continued cooperative agreements to cover costs of shared air charter services to Snettisham and provided net-billing arrangements to cover costs of non-Federal operators and routine transmission line maintenance. Continued cooperation with the State of Alaska on their salmon hatchery at the Snettisham Project, with the Cook Inlet Aquaculture Association's similar facility at Eklutna, and with the Municipality of Anchorage on its Eklutna Water Supply Project.	Provides for normal operation, maintenance, and power marketing programs for both Eklutna and Snettisham projects, including the new Crater Lake addition. Emphasis on environment, safety, and health programs is increased by providing the compliance activity, proper waste management, minimum training, and equipment necessary to comply with current regulations. Markets an estimated 388 GWH of clean renewable hydroelectric energy providing total proprietary receipts of $9,558,000 Continue cost-effective cooperative agreements for shared air charter services to Snettisham and provide net-billing arrangements to cover costs of non-Federal operators and routine transmission line maintenance at both Eklutna and Snettisham Projects. Continue cooperation with the State of Alaska on its salmon hatchery at the Snettisham Project, with the Cook Inlet Aquaculture Association's similar facility at Eklutna, and with the Municipality of Anchorage on its Eklutna Water Supply Project.	The request provides for normal operation, maintenance, and power marketing programs for both Eklutna and Snettisham projects. The request continues emphasis on environment, safety, and health programs. Provides for marketing an estimated 415 GWH of clean renewable hydroelectric energy with total proprietary receipts of $11,160,000. Continues cost-effective cooperative agreements for shared air charter services to Snettisham and provides net-billing arrangements to cover costs of non-Federal operators and routine transmission line maintenance at both Eklutna and Snettisham Projects. Continues cooperation with the State of Alaska on its salmon hatchery at the Snettisham Project, with the Cook Inlet Aquaculture Association's similar facility at Eklutna, and with the Municipality of Anchorage on its Eklutna Water Supply Project.
	$ 2,081	$ 2,083	$ 2,207
Total, Operation and Maintenance	35.0 FTE $ 4,010	35.0 FTE $ 6,494	35.0 FTE $ 4,260

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
POWER MARKETING ADMINISTRATION

REVENUES AND RECEIPT REPORT
(dollars in thousands)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Alaska Power Administration							
Gross Receipts	$10,206	$10,688	$11,702	$11,211	$11,719	$11,754	$11,788
Sale and transmission of electric energy at the Eklutna Project	$2,836	$2,791	$3,050	$2,585	$3,050	$3,050	$3,050
Sale and transmission of electric energy at the Snettisham Project	$7,370	$7,897	$8,652	$8,626	$8,669	$8,704	$8,738
Net billing amount credited as an offsetting receipt	$ -732	$-1,130	$ -542	$ -554	$ -566	$ -579	$ -593
Total Proprietary Receipts	$9,474	$9,558	$11,160	$10,657	$11,153	$11,175	$11,195
Percent of sales to preference customers	41%	37%	40%	34%	39%	39%	39%
Energy Sales and Power Marketed (in billions of kilowatt hours)	0.4	0.4	0.4	0.4	0.4	0.4	0.4

FY 1994 does not reflect $437K additional net billing authorized by Congress in support of Snettisham 12/2 Transmission Line Landslide and the Transmission Line ground fault investigation.

FY 1995 net billing amount of $1,130K includes $530K for normal operations and maintenance activities and $600K to complete the Snettisham 12/2 Transmission Line Landslide work.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
POWER MARKETING ADMINISTRATION

SYSTEM STATISTICS

ALASKA POWER ADMINISTRATION

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Generating Capacity:			
Installed Capacity (KW)	108,160	108,160	108,160
Leasing Capacity (KW)	0	0	0
Peak Capacity (KW)	108,160	108,160	108,160
Generating Stations:			
Generating Projects (No.)	2	2	2
Substations/Switchyards (No.)	5	5	5
Substations/Switchyards (KVA Capacity)	237,000	237,000	237,000
Available Energy:			
Energy Generated (MWH)	424,000	414,000	425,000
Energy Purchased (MWH)	0	0	0
Energy Available for Marketing (MWH)	421,000	411,000	422,000
Transmission Lines (Circuit Miles):			
115 KV	44	44	44
138 KV	44	44	44
Total Circuit Miles	88	88	88

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Bonneville Power Administration

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Proposed Appropriation Language

Bonneville Power Administration Fund

Expenditures from the Bonneville Power Administration Fund, established pursuant to Public Law 93-454, are approved for [the purchase, operation and maintenance of two rotary-wing aircraft for replacement only, and for] official reception and representation expenses in an amount not to exceed $3,000. 1/

During fiscal year [1995] 1996, [no] new direct loan obligations may [be made] not exceed $29,000,000: *Provided*, That a risk premium shall be charged to the borrower equal to the cost, as defined in section 502 of the Congressional Budget Act of 1974, of the direct loans issued. 2/

1/ Proposed language provides for the same level of official reception and representation funding as in FY 1995.

2/ Proposed language removes the prohibition against BPA's making energy conservation loads authorized by Public Law 96-501 of 1980.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
BONNEVILLE POWER ADMINISTRATION

BUDGET PREFACE AND OVERVIEW

Mission

Bonneville Power Administration (Bonneville) is one of five Federal power marketing administrations. It serves a 300,000-square-mile area including Oregon, Washington, Idaho, western Montana, and parts of northern California, Nevada, Utah, and Wyoming. Bonneville markets about one-half of the electric energy produced in the Pacific Northwest and provides about four-fifths of the region's electric power transmission capacity.

Bonneville's activities conform to the mandates of the Bonneville Project Act of 1937, the Federal Columbia River Transmission System Act of 1974 (Transmission Act) and the requirements of the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Pacific Northwest Power Act).

Bonneville was created in 1937 to market and transmit the power produced by Bonneville Dam on the Columbia River. Since then, Congress has directed Bonneville to sell at wholesale the power produced at a total of 30 Federal dams in the Pacific Northwest, and to acquire non-Federal power and conservation resources sufficient to meet the growing needs of Bonneville's customer utilities.

The Transmission Act placed Bonneville under provisions of the Government Corporation Control Act. It also provided Bonneville with authority to use its revenues from electric ratepayers to fund all programs directly, and allowed Bonneville to sell bonds to the U.S. Treasury to finance the region's high voltage transmission requirements.

The Pacific Northwest Power Act expanded Bonneville's utility obligations and increased Bonneville's responsibilities to encourage conservation and develop renewable resources, and to protect, mitigate and enhance the fish and wildlife, particularly the anadromous fish, of the Columbia River and its tributaries. In support of these responsibilities, Bonneville's borrowing authority was expanded to allow the sale of bonds to finance conservation and other resources and carry out fish and wildlife capital improvements. The Pacific Northwest Power Act also required regional energy plans and programs, and created the Northwest Power Planning Council.

Funding

Bonneville receives no annual appropriations from Congress. Operating under the Transmission System Act, Bonneville funds the expense portion of its budget and repayment of the Federal investment with revenues from electric rates. Bonneville's revenues fluctuate primarily in response to market prices for fuels and commodity metals, and to weather conditions affecting streamflows in the Columbia River system. Bonneville is authorized to sell bonds to the Treasury up to a cumulative outstanding total of $3.75 billion. Through FY 1994, Bonneville has returned approximately $11 billion to the U.S. Treasury in interest, amortization, and repayment of Federal power generation, operation, maintenance, and construction costs. During FY 1996, Bonneville plans to pay the Treasury in full its annual

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scheduled amortization payment which will be based on the 1995 rate proposal. Currently, the FY 1996 Treasury payment estimate is $762.4 million, of which $200.8 million is to repay principal

Bonneville's FY 1996 Budget has been prepared in accordance with the Budget Enforcement Act (BEA) of 1990. Under this Act, all Bonneville budget estimates are treated as mandatory and are not subject to limitations included in the BEA. These estimates support activities which are legally separate from discretionary activities and accounts. Thus, any changes to Bonneville estimates cannot be used to affect any other budget categories which have their own legal dollar caps. The FY 1996 budget does not include a request for any new legislative authorization. Since Bonneville operates within existing legislative authority, Bonneville is not subject to a BEA "pay-as-you-go" test regarding any revision of funding estimates.

As in previous years, this budget contains obligational authority for the performance of beneficial work for other entities. These activities, including costs associated with the use of facilities and staff resources, are performed on a fully reimbursable basis. The obligations and expenditures (outlays) in this budget submission reflect "best estimates" as of December 1994. The budget is based on the program levels which will be used to develop the revenue requirement for the Initial Rate Proposal. These program estimates are still subject to change due to several reasons including: 1) continued review of program levels by Bonneville, as well as its customers and constituents, as part of the final Business Plan development and the rate setting process, and 2) current ongoing activities concerning several of the items discussed below.

Reinvention Activities/ Business Plan

In response to changes in the utility industry and the competitive pressures Bonneville faces, as well as in conjunction with the President's National Performance Review, Bonneville is in the midst of a reinvention effort. The overall purpose of Bonneville's reinvention effort, characterized generally as the Competitiveness Project, is to focus Bonneville on becoming market driven, customer focused, cost-conscious, and results oriented.

As part of its reinvention efforts, Bonneville released a Draft Business Plan for public comment on June 29, 1994. Aimed at the electric utility industry's increasing competitive pressures, the plan addresses issues associated with reducing Bonneville's costs, unbundling and pricing the agency's products and services, and providing an increased focus on customer service. The plan also contains several capital financing initiatives designed to make the current borrowing cap last until FY 2001. The initiatives are to identify additional reductions in capital spending through the application of a capital budgeting process; revenue finance certain transmission, fish and wildlife capital investments; to the extent allowable, shift costs from the Transmission/Fish and Wildlife borrowing authority to the Conservation borrowing authority; and utilize third-party financing of capital investments when possible.

An evaluation of Bonneville's current and future investment decisions and associated funding sources will be a component of the final plan. Bonneville's commitment to legislative mandates will not change. The plan will help in guiding the agency to meet its mandates in the new competitive utility environment. The Business Plan is scheduled for completion in June 1995.

In addition to implementing a new marketing and business planning process, Bonneville completed an internal reorganization geared at improving efficiency and better supporting the competitiveness initiatives outlined in the Draft Business Plan. This reorganization has resulted in changes which simplify Bonneville's program structure. The new program categories are shown in this submission.

As part of reinvention, Bonneville is reaffirming its conservation goals and substantially changing the way it approaches acquiring conservation. The Draft Business Plan supports the Northwest Power Planning Council's goal for regional cost-effective conservation and as part of achieving that goal, proposes to establish a self-supporting product line for conservation services. Bonneville is planning for the use of direct loans to its customers as an additional method for acquiring conservation and for managing its costs.

As an important tool in the conservation effort, Bonneville has included in this budget provisions in our appropriations language markup approving access to our authority to issue direct loans. This authority was granted in the Pacific Northwest Power Act, which gave Bonneville $1.25 billion for conservation and renewable resource loans and grants. Bonneville has issued direct loans in the past and, since this is a preexisting authority, Bonneville believes, based on preliminary contacts with the OMB and CBO, that issuing loans once more will not pose budget deficit scorekeeping problems for the Congressional committees. To assure planning certainty for conducting the Conservation program, Bonneville has included appropriations language in the budget to allow $29 million in conservation loans during FY 1996.

Proposed Mitchell Act Funding

Legislation will be introduced to transfer responsibility for funding the operations and maintenance of the Mitchell Act hatcheries from the National Marine Fisheries Service to Bonneville starting in FY 1996. The additional costs of $14,100 per year for FY 1996-2000 are included in the Program and Financing and the other President's Budget Appendix tables in the back of this document as an equal increase to receipts, obligations, and outlays. Since the receipts, obligations, and outlays occur in the same year net outlays are not affected.

Proposed Government Corporation Legislation

Legislation is being proposed in the FY 1996 Congressional Budget submission to make BPA a wholly-owned government corporation under the Government Corporation Control Act. This would increase BPA's flexibility over personnel, procurement, financial, budget, and litigation functions to allow BPA to carry out more effectively its existing responsibilities and to compete more effectively in increasingly competitive electric power markets. BPA has already obtained administrative relief from significant barriers in these areas as a National Performance Review reinvention laboratory. This legislation would make permanent the relief obtained administratively as well as relieve the agency from additional administrative burdens which are statutory in nature.

Colville Legislation

As a result of new legislation passed in October 1994, Bonneville is responsible for making payments to the Confederated Colville Tribes in settlement of a long-standing lawsuit. The Tribes sought a portion of Grand Coulee revenues to compensate them for land that they lost as a result of the Federal Government's construction of the dam. The legislation calls for the Federal Government Judgment Fund to make a lump sum payment of $53 million to the Colvilles, and for Bonneville to make an initial annual payment of $15.25 million in 1996 and amounts thereafter which are tied to the actual generation of the dam and Bonneville's rates. The legislation also calls for the U. S. Treasury to be responsible for 30 percent of the total amount paid to the Tribes. Therefore, the legislation calls for the U.S. Treasury to give Bonneville a credit for a portion of the amount of Bonneville's payments beginning in FY 2000.

Marketing, Conservation and Production

Growth in the region and changes in river operations have combined to end the power surplus that once existed in the Pacific Northwest. Now the demand for electric energy exceeds supply by about 400 average megawatts per year. By the year 2000, Bonneville's resource needs could exceed current supply by as much as 1,500 to 2,600 average megawatts. Working closely with the Northwest Power Planning Council, Bonneville is preparing to meet the future power needs of its customers. For the past 10 years, Bonneville has relied primarily on its conservation programs to meet growth in power needs. Conservation is the first priority resource because it can be brought on in small, manageable increments, is reliable, and is generally less expensive than other energy resources.

To stay competitive in a rapidly changing electric utility industry, Bonneville is committed to offering business lines which focus on the full range of customer needs. Conservation Reinvention seeks to put conservation on a more competitive ground. The goal is to continue on the path toward acquiring all cost-effective conservation in Bonneville's service area, while creating a Demand Side Management (DSM) product line which is fully self-supporting in conjunction with establishing a foundation for an energy services relationship with our customers.

Transmission System Growth and Reliability

Due to past load growth in the Seattle and Puget Sound area of western Washington, the demand on the high voltage transmission lines that carry electrical power over the Cascade Mountains from central Washington to the Puget Sound area is at capacity limits during peak conditions. If a critical transmission line into the Puget Sound area is taken out of service for any reason, the result could be voltage collapse and an area-wide blackout. In June 1992, Bonneville completed a 30-month public review process and adopted a long-range plan that incorporates low cost, low environmental impact actions to maintain the reliability of the bulk power system serving the Puget Sound area.

As a result of recent regional economic changes, the load growth rates for the Seattle and Puget Sound area have declined for the immediate future. The changes in power system forecasts, along with other previously planned projects nearing completion, permit the deferral of the proposed installation of series capacitors at the Schultz Substation to 1998. The construction of the Schultz substation (switching station) to meet reliability criteria was completed on schedule in October 1994. Bonneville is continuing to study and develop a plan of service to eliminate system bottle necks on the power system that inhibit further east-to-west firm transfer capacity.

More than $3 billion has been invested in Bonneville's power grid, which provides about eighty percent of the region's electric power transmission capacity. Bonneville load growth in the Northwest and increased power exchanges outside the region will place heavy demands on the system, requiring that Bonneville take measures to maintain and reinforce transmission facilities to ensure reliable service.

In an effort to minimize rate increases, Bonneville deferred numerous maintenance activities during the 1980s. To address this maintenance backlog and assure system reliability in the future, Bonneville has recently completed work with the region revising and updating the 10-Year (1992-2001) Plan for system operations, maintenance, and replacement (OM&R) first developed in 1990. The main objective of the plan is to bring all scheduled maintenance and replacements current by the year 2001. Emphasis will be on (1) replacing obsolete and maintenance-intensive breakers and control equipment, (2) replacing PCB contaminated capacitors, (3) increased use of

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diagnostic testing to reduce catastrophic failure in extra high voltage equipment, and 4) continued replacement for all other existing equipment and facilities in the program.

Associated Projects

The Associated Projects program is based on direct funding by Bonneville for additions, improvements and replacements at existing Federal hydroelectric projects in the Northwest. A Memorandum of Agreement with the Bureau of Reclamation (Bureau) discussing terms, conditions, and legal and regulatory matters surrounding direct funding has been prepared and signed by Bonneville and the Bureau. A Memorandum of Agreement with the Corps of Engineers (Corps) was signed in December 1994 by both parties and will be implemented in FY 1995. In accordance with the Bureau of Reclamation memorandum, Bonneville's FY 1996 budget includes direct funding for five Bureau projects: A major rehabilitation of the Minidoka project; stator rewinds of three generators at Grand Coulee; turbine efficiency improvements (G1 through G18) at Grand Coulee; replacement of 115 kV transformers at the Hungry Horse project; and a major overhaul of the original generators installed in 1912 at the Boise diversion project. In accordance with the Corps of Engineers memorandum, Bonneville's FY 1996 budget includes direct funding for one Corps project: Rewind of the Dalles Unit 9 and the program to index the 3-D cams on the Columbia and Lower Snake River Projects.

Fish and Wildlife

One of the most pressing environmental challenges facing the Northwest is the serious decline in Columbia Basin wild salmon stocks. The decline in these species is evidenced by the listing of the Snake River sockeye as endangered in 1994 under the Endangered Species Act. The Snake River spring/summer chinook and the Snake River fall chinook were both upgraded from threatened to endangered in August 1994. This also emphasizes the need for a balanced regional approach to management of the Columbia River. Since 1980, Bonneville ratepayers have spent over $1 billion to mitigate fish and wildlife impacts associated with the construction and operation of the Federal hydroelectric projects on the Columbia River system. Bonneville strongly supports the regional effort of the Northwest Power Planning Council to protect, mitigate, and enhance fish and wildlife affected by the hydroelectric system, especially weakened fish stock. Bonneville implements actions which are consistent with the Council's recommendations that are contained in the Council's Fish and Wildlife Program (Program). The Council amended the Program in December 1994 to reflect recent Federal Court decisions and to reflect the actions called for under the Endangered Species Act.

Customer Working Relationships

An area that will absorb the attention of Bonneville and the Pacific Northwest in FY 1995 is contract renewals. There are several contracts which together form the foundation for the Northwest hydroelectric system. They all expire around the year 2000. These include the Pacific Northwest Coordination Agreement, which is the basis for the inter-utility and interagency coordination of the Columbia River power system; Bonneville's power sales contracts with its utility and industrial customers; and the "Canadian Entitlement" power sold to the United States by Canada for 30 years when the Columbia River Treaty was signed in 1961. These contracts form the Northwest's mutually dependent and coordinated power system. For the system to continue, the contracts must be renewed or replaced during the 1990s. The United States Entity signed a set of "agreements in principle" with Canada on the Canadian Entitlement in September 1994. These principles establish how the two countries will finalize renegotiation for delivery of the entitlement benefits for the next 30 year period. A formal agreement is expected to be signed and completed by next summer. Bonneville is currently working

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with the other Canadian Entitlement beneficiaries to allocate benefits and finance the agreed upon payment to Canada. At this time, Bonneville anticipates that debt issued by other entities will be available to finance the payment.

Budget Submission

This budget emphasizes Bonneville's capital program, the five components of which are planned to be funded through sale of bonds to the Treasury: (i) Marketing, Conservation and Production, (ii) Transmission Services, (iii) Associated Projects, (iv) Environment/Fish and Wildlife, and (v) Capital Equipment. During FY 1996, Bonneville proposes to obligate $378 million of its borrowing authority for these capital programs, a decrease from $447.8 million in FY 1995.

The budget also provides for Bonneville's "self-financing" of annual operating programs through the direct use of Bonneville revenues. The FY 1996 budget proposes obligations of $3,031.7 million for operating programs. Total Bonneville budget obligations in FY 1996 for operating programs, reimbursable activities, and capital investments are $3,496.0 million.

Performance Measures

The performance measures listed here are based on the measures to be included in the FY 1994 Annual Management Report. They address the key areas of Bonneville's business, including fulfillment of fish and wildlife responsibilities, status of Treasury repayment, meeting customer load, transmission system control performance, system safety, BPA conservation resource costs, and rate competitiveness.

As mentioned earlier, Bonneville is currently engaged in an intensive effort, called the Competitiveness Project, to evaluate its business strategy and to enhance its competitiveness relative to trends in the electric utility industry. A fundamental aspect of this Project is to identify Strategic Business Objectives which further identify and define Bonneville's mission, and to specify Critical Success Indicators to provide more quantified expressions of evaluating or measuring Bonneville's achievement of these objectives.

Based upon the progress of this Project and the public comment that Bonneville will receive during the course of the Project, the Critical Success Indicators will be refined and enhanced as the proper measures of Bonneville's program success or failure. Potentially, the performance measures listed below may be refined or replaced as the Competitiveness Project and its Critical Success Indicators evolve.

Fish and Wildlife Responsibilities Performance Measure: The Pacific Northwest Power Act expanded Bonneville's responsibilities to include protection, mitigation and enhancement of the fish and wildlife resources of the Columbia river and its tributaries, particularly anadromous fisheries. In its fish and wildlife mitigation responsibilities, Bonneville must balance fish passage and flow requirements with the operational requirements of the power system. Bonneville must also prioritize activities within its ongoing fish and wildlife program and the increasingly mandated demands of the Endangered Species Act (ESA). Bonneville's goal is to operate the system such that the National Marine Fisheries Service determines "no jeopardy" each year.

The following graphs present a historical record of each of the remaining performance measures.

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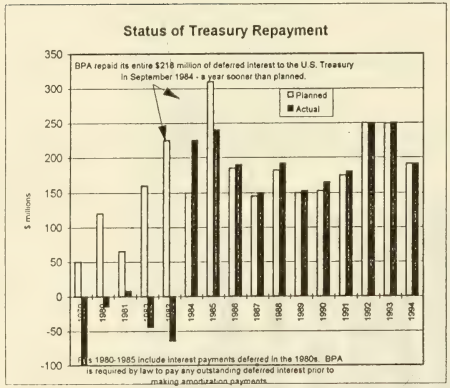
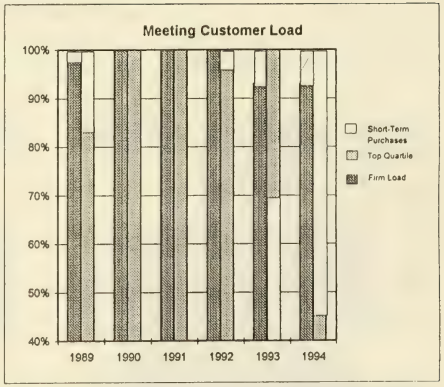
DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

PERFORMANCE MEASURES



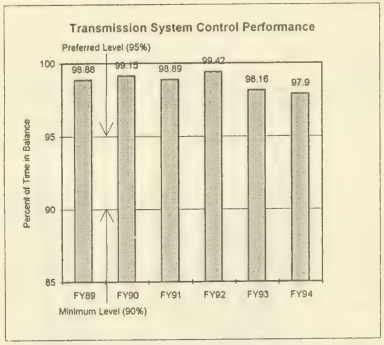
The schedule for repayment of Federal obligations ensures all obligations are retired in full on or before their legally prescribed due dates. This measure demonstrates the variance between actual and planned annual repayment of Treasury debt obligations. Fiscal year 1994 marked the eleventh consecutive year Bonneville was able to make its Treasury payment in full and on time.



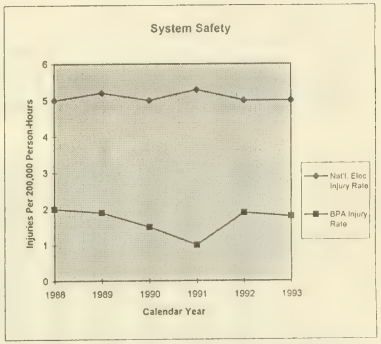
This measure tracks Bonneville's ability to anticipate and respond to potential shortages of electric power that would jeopardize service to firm loads. From an operating perspective, this measure reflects the ability of Bonneville to make accurate assessments of the current and future power supply situation and the availability of long- and short-term resources to meet firm commitments.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

PERFORMANCE MEASURES



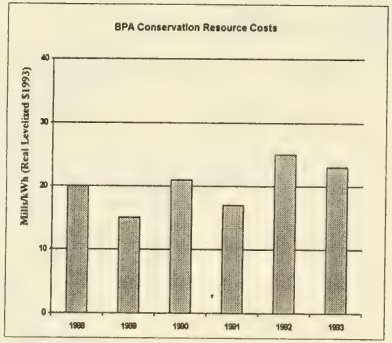
Compliance with Automatic Generation Control criteria is a measure of the reliability and capacity of the Northwest's Federal generation-transmission network. The higher this performance measure, the better the power system is able to respond to changing power system conditions.



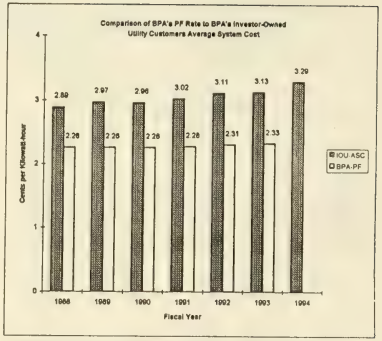
As a major transmission provider of high-voltage electric power in the Pacific Northwest, an activity with high potential exposure to risk, Bonneville has always placed employee safety as a high priority. Bonneville's commitment to make safety an integral, first priority in the work force continues to hold down the number of injuries.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

PERFORMANCE MEASURES



Bonneville's Resource Program supports the acquisition of all cost-effective conservation as compared on a levelized cost per kilowatt-hour (kWh) basis. The chart above focuses on Bonneville's ability to provide our customers with cost-effective and environmentally sound products and services. Bonneville is currently assessing new methods to more efficiently and cost-effectively deliver conservation.



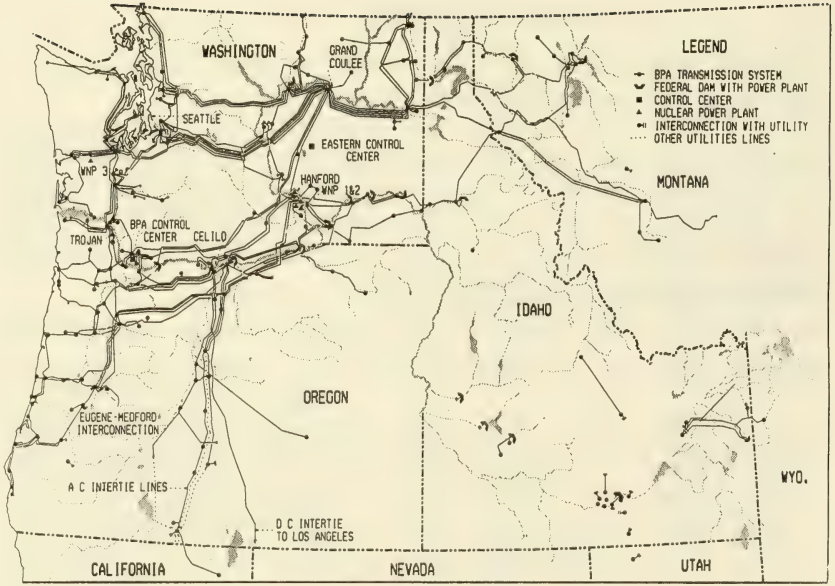
A measure of Bonneville's competitiveness can be made by comparing Bonneville's Priority Firm rate, the rate Bonneville sells basic service to its utility customers, to a regional Investor Owned Utility's (IOU) average system cost, the IOU's cost to provide basic power production and transmission services.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

SYSTEM STATISTICS

	FY 1994	FY 1995	FY 1996
Capacity Resources (MW)			
System Hydro (9 USBR & 21 USCE projects)	22,279	22,279	22,279
Large Thermal (WNP-2) 1/	1,100	1,100	1,150
TOTAL CAPACITY RESOURCES	23,379	23,379	23,429
Energy Resources (MWH)			
Energy generated for BPA:			
Federal Firm Hydro	62,135,000	62,135,000	62,135,000
Secondary Hydro (non-firm)	1,679,000	5,000,000	5,000,000
Thermal			
WNP-2 1/	6,228,000	6,220,000	7,174,440
Hanford 2/	(2,000)	(2,000)	(2,000)
Contracted Resources 3/	300,000	867,000	867,000
Other 4/	430,000	430,000	
SUBTOTAL	70,770,000	74,650,000	75,174,440
Energy Acquired or Received for delivery by BPA (MWH)			
Wheeling (non-Federal)	53,820,000	55,300,000	56,800,000
Purchased Power	5,000,000	5,000,000	5,000,000
Interchange 5/	14,000,000	14,000,000	14,000,000
SUBTOTAL	72,820,000	74,300,000	75,800,000
TOTAL ENERGY RECEIVED (Trans. Sys. Load)	143,590,000	148,950,000	150,974,440
Substations			
Number of energized substations	390	395	398
kVA capacity	68,386,930	69,881,930	71,394,930
Transmission lines energized			
Total kilometers (circuit miles)	23,800 (14,800)	23,826 (14,808)	23,833 (14,812)
Investments ($ million) 6/			
Transmission facilities (BPA)	4,328	4,706	4,945
USCE & USBR hydroelectric facilities	5,892	6,000	6,154
Fish and Wildlife (BPA)	115	172	191
Conservation	1,052	1,232	1,324
TOTAL	11,387	12,110	12,614

1/ WNP-2 output includes system upgrades.
2/ Hanford has not been generating since 1987. Approximately 2000 MWH is needed for station service.
3/ Includes resource acquisitions.
4/ Includes, but not limited to, public agency shares of Priest Rapids, Wanapum, Wells.
5/ Includes, but not limited to, Pacific Northwest Coordination Agreement transactions, storage, uncontrolled, peaking, and reserved energy.
6/ Investment estimates include long-term debt and Federal appropriations. Construction Work-In-Progress (CWIP) is not included.
This treatment is consistent with other Congressional presentations.



BPA TRANSMISSION SYSTEM

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

LEAD TABLE a/
(in thousands of dollars)

		FY 1994 Actuals	FY 1995 Request	FY 1995 Amendment	FY 1995 Amended	FY 1996 Request
	Capital Investment Obligations					
1	Marketing, Conservation & Production	108,126	153,400	0	153,400	84,200
2	Transmission Services	192,043	199,600	0	199,600	223,100
3	Associated Projects	22,150	26,100	0	26,100	25,300
4	Environment\Fish & Wildlife	34,560	40,700	0	40,700	32,100
5	Capital Equipment	12,876	13,400	0	13,400	13,300
7	Capitalized Bond Premiums	15,579	14,600	0	14,600	0
8	**TOTAL CAPITAL OBLIGATIONS**	**385,334**	**447,800**	**0**	**447,800**	**378,000**
	Expensed and Reimbursable Obligations					
9	Expensed	2,825,352	2,940,200	0	2,940,200	3,031,700
10	Reimbursable	83,030	84,700	0	84,700	86,300
11	**TOTAL OBLIGATIONS (lines 8 + 9 + 10)**	**3,293,716**	**3,472,700**	**0**	**3,472,700**	**3,496,000**
12	Capital Transfers (Cash)	172,685	502,200	0	502,200	200,800
13	**BPA TOTALS (lines 11 + 12)**	**3,466,401**	**3,974,900**	**0**	**3,974,900**	**3,696,800**
14	Staffing (FTE) b/	3,596	3,440	- -	3,440	3,325

a/ BPA's FY 1996 budget has been prepared in accordance with the Budget Enforcement Act (BEA) of 1990. Under this Act all BPA budget estimates are treated as mandatory and are not subject to the discretionary caps included in the BEA. These estimates support activities which are legally separate from discretionary activities and accounts. Thus, any changes to BPA estimates cannot be used to affect any other budget categories such as domestic discretionary, or defense discretionary which have their own legal dollar caps. During FY 1996, the administration will propose legislation giving Bonneville government corporation status as well as legislation which would transfer funding responsibility for the Mitchell Act Hatcheries to Bonneville, and allow Bonneville to pay those costs from rate-payer generated revenues. While these proposals do include requests for new legislative authorization, they do not have budget authority impacts, and thus do not subject Bonneville to Budget Enforcement "pay-as-you-go" tests regarding its revision of funding estimates.

b/ FTE levels for FY 1995-2000 reflect Bonneville's submission to the Department of Energy.

FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES
(in thousands of dollars)

	BP-1 SUMMARY	FY 1994		FY 1995		FY 1996		FY 1997	FY 1998	FY 1999	FY 2000
		TOTAL OBLIGATIONS/OUTLAYS									
		Obligations	Outlays	Obligations	Outlays	Obligations	Outlays	Obligations	Obligations	Obligations	Obligations
1	Residential Exchange	962,482	962,500	972,200	971,100	1,011,800	1,011,800	1,073,000	1,115,400	1,149,800	1,186,300
2	Marketing, Conservation & Production 1/	1,224,713	1,206,638	1,306,800	1,355,400	1,305,200	1,312,200	1,328,800	1,375,600	1,488,400	1,509,900
3	Transmission Services 1/	352,140	341,600	364,400	365,400	381,200	351,300	427,400	426,500	405,100	447,200
4	Environment\Fish & Wildlife 1/	97,451	76,400	113,500	102,500	112,000	114,400	111,100	112,400	113,400	114,500
5	Interest	369,672	376,400	407,600	392,800	402,400	402,400	416,600	428,500	432,200	443,800
6	Associated Projects - Capital	22,150	18,400	26,100	26,100	25,300	25,300	16,400	15,900	29,400	46,400
7	Associated Project Costs 2/	145,533	154,800	160,900	160,800	149,700	149,700	188,900	212,500	168,300	174,200
8	Capital Equipment	12,876	12,900	13,400	13,400	13,300	13,300	12,500	12,700	13,200	15,000
9	Planning Council	8,090	7,900	8,500	8,500	8,800	8,800	9,100	9,500	9,800	10,100
10	Reimbursable	83,030	83,030	84,700	84,700	86,300	86,300	87,800	89,400	91,000	92,700
11	Capitalized Bond Premiums	15,579	15,500	14,600	0	0	0	0	0	0	0
12	**TOTAL OBLIGATIONS/OUTLAYS 3/**	**3,293,716**	**3,256,068**	**3,472,700**	**3,480,700**	**3,496,000**	**3,475,500**	**3,671,600**	**3,798,400**	**3,900,600**	**4,040,100**
		REVENUES AND REIMBURSEMENTS									
		Accrued	Cash	Accrued	Cash	Accrued	Cash	Accrued	Accrued	Accrued	Accrued
13	Revenues 4/	2,993,982	2,993,982	3,165,500	3,321,500	3,520,500	3,517,000	3,628,000	3,604,600	3,773,700	3,882,600
14	Reimbursements	83,030	83,030	84,700	84,700	86,300	86,300	87,800	89,400	91,000	92,700
15	**TOTAL REVENUES & REIMBURSEMENTS**	**3,077,012**	**3,077,012**	**3,250,200**	**3,406,200**	**3,606,800**	**3,603,300**	**3,713,800**	**3,694,000**	**3,864,700**	**3,975,300**
		BUDGET AUTHORITY (NET)/OUTLAYS (NET)									
16	**BUDGET AUTHORITY (NET) 4/ 5/**	**167,698**		**147,100**		**(107,300)**		**(42,200)**	**104,400**	**35,900**	**64,800**
17	**OUTLAYS (NET) 4/**		**179,056**		**74,500**		**(127,800)**	**(42,200)**	**104,400**	**35,900**	**64,800**

1/ The Marketing, Conservation & Production line consists of the former Energy Resources, Power Marketing and Power Scheduling programs. The Transmission Services line consists of the former Transmission System Development, System Operations, System Maintenance and System Replacements programs. The Environment/Fish & Wildlife line includes the old Fish & Wildlife program with the addition of environmental activities previously part of the Transmission System Replacements and Maintenance programs.

2/ The Associated Project Costs amount in line 7 includes the amortization of Bureau of Reclamation appropriations and irrigation assistance, which are treated as obligations and outlays. Bureau amortization is as follows: $18,310 in FY 1994, $21,400 in FY 1995, $0 in FY 1996, $13,100 in FY 1997, $49,300 in FY 1998, $0 in FY 1999 and $0 in FY 2000. Irrigation assistance of $25,100 is reflected in FY 1997 only.

3/ Bonneville's total obligations as displayed above reflect the new program structure developed as a result of our transformation efforts and the draft Business Plan. These obligations are still tentative and subject to change since BPA has not yet completed work on its revenue requirement studies for the 1995 rate case nor has BPA concluded work on its final Business Plan. That Plan is not expected to be in final until June of 1995. All program/product projected costs are considered to be draft until such time as the Business Plan is completed and published.

4/ FY 1994 revenues reflect actuals. FY 1995 revenues reflect an estimate from the 4th Quarter Review on a gross exchange basis. Actual revenues are very uncertain and are heavily influenced by customer firm loads and aluminum prices; runoff volume and constraints on operations of hydroelectric facilities in the Columbia basin; fossil fuel prices; thermal plant performance and costs; etc. FY 1996-2000 revenues reflect expensed obligations in the budget, less amortization of Bureau appropriations and irrigation assistance, plus depreciation estimates and planned net revenues from the 1995 Initial Rate Proposal. The cash amount for total revenues and reimbursements for FY 1995 includes the anticipated receipt of $156 million from the Non-Federal participants in the Third AC Transmission line. The accrual amounts for FY 1996-2000 include 1/45th of this amount, $3.5 million per year, to reflect how these funds will be included in financial statements. The revenues shown here for FY 1996-2000 include additional funds needed to finance the Mitchell Act Hatcheries O&M. It is proposed that legislation be introduced to transfer responsibility, starting in FY 1996, for these hatcheries' funding to Bonneville. The additional costs of $14,100 per year for FY 1996-2000 is included in the Program and Financing and the other President's Budget Appendix tables in the back of this document as a negative appropriation. Revenues (offsetting collections) have also been increased in the appendix tables to cover these additional costs. Both net budget authority and net outlays in this table and in the appendix materials include the proposed Mitchell Act Hatcheries funding.

5/ BPA's FY 1996 budget has been prepared in accordance with the Budget Enforcement Act (BEA) of 1990. Under this Act all BPA budget estimates are treated as mandatory and are not subject to the discretionary caps included in the BEA. These estimates support activities which are legally separate from discretionary activities and accounts. Thus, any changes to BPA estimates cannot be used to affect any other budget categories which have their own legal dollar caps. The FY 1996 budget reflects the impact of passage of the Colville Settlement legislation; however it does not reflect the impact of debt-buyout legislation which has been proposed by the Administration, transmitted to the Congress and introduced in the Senate by Senator Mark Hatfield. It also does not reflect any impact of corporate legislation for Bonneville which has been discussed with the region and proposed by the President.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES
(in thousands of dollars)

BP-2

FRB 31-Jan-95

EXPENSED OBLIGATIONS/OUTLAYS

		FY 1994		FY 1995		FY 1996		FY 1997	FY 1998	FY 1999	FY 2000
		Obligations	Outlays	Obligations	Outlays	Obligations	Outlays	Obligations	Obligations	Obligations	Obligations
1	Residential Exchange	962,482	962,500	972,200	971,100	1,011,800	1,011,800	1,073,000	1,115,400	1,149,800	1,186,300
2	Marketing, Conservation & Production	1,116,587	1,092,938	1,153,400	1,202,000	1,221,000	1,221,000	1,247,500	1,289,500	1,401,000	1,423,400
3	Transmission Services	160,097	159,700	164,800	163,500	158,100	158,100	162,500	168,300	175,000	182,500
4	Environment\Fish & Wildlife	62,891	55,900	72,800	61,800	79,900	79,900	80,300	80,800	81,400	82,100
5	Associated Project Costs	145,533	154,800	160,900	160,800	149,700	149,700	188,900	212,500	168,300	174,200
6	Interest	369,672	376,400	407,600	392,800	402,400	402,400	416,600	428,500	432,200	443,800
7	Planning Council	8,090	7,900	8,500	8,500	8,800	8,800	9,100	9,500	9,800	10,100
8	**OBLIGATIONS/OUTLAYS**	**2,825,352**	**2,810,138**	**2,940,200**	**2,960,500**	**3,031,700**	**3,031,700**	**3,177,900**	**3,304,500**	**3,417,500**	**3,502,400**
9	TOTAL REIMBURSABLE OBLIGATIONS/OUTLAYS	83,030	83,030	84,700	84,700	86,300	86,300	87,800	89,400	91,000	92,700

CAPITAL OBLIGATIONS/OUTLAYS

		FY 1994		FY 1995		FY 1996		FY 1997	FY 1998	FY 1999	FY 2000
		Obligations	Outlays	Obligations	Outlays	Obligations	Outlays	Obligations	Obligations	Obligations	Obligations
10	Marketing, Conservation & Production	108,126	113,700	153,400	153,400	84,200	91,200	81,300	86,100	87,400	86,500
11	Transmission Services	192,043	181,900	199,600	201,900	223,100	193,200	264,900	258,200	230,100	264,700
12	Associated Projects	22,150	18,400	26,100	23,400	25,300	25,300	16,400	15,900	29,400	46,400
13	Environment\Fish & Wildlife	34,560	20,500	40,700	40,700	32,100	34,500	30,800	31,600	32,000	32,400
14	Capital Equipment	12,876	12,900	13,400	13,400	13,300	13,300	12,500	12,700	13,200	15,000
15	Capitalized Bond Premium	15,579	15,500	14,600	0	0	0	0	0	0	0
16	**TOTAL CAPITAL INVESTMENTS 1/**	**385,334**	**362,900**	**447,800**	**432,800**	**378,000**	**357,500**	**405,900**	**404,500**	**392,100**	**445,000**
17	**BORROWING AUTHORITY TO FINANCE CAPITAL OBLIGATIONS 2/**	**385,334**		**447,800**		**378,000**		**405,900**	**404,500**	**392,100**	**445,000**
18	**BORROWING AUTHORITY TO FINANCE OTHER OBLIGATIONS 3/**	**(44,951)**		**201,500**		**(270,400)**		**(89,300)**	**(50,200)**	**(111,200)**	**(133,300)**
19	**TOTAL BORROWING AUTHORITY**	**340,383**		**649,300**		**107,600**		**316,600**	**354,300**	**280,900**	**311,700**

BP-3

	CAPITAL TRANSFERS	FY 1994	FY 1995		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
	Amortization:	Payments	Payments		Payments	Payments	Payments	Payments	Payments
20	BPA Bonds	55,873	272,100		200,800	289,400	149,800	185,800	207,500
21	Third AC - Non-Federal Participant Payment	0	156,000	4/	0	0	0	0	0
22	BPA Appropriations	0	0		0	51,400	37,200	45,100	25,300
23	Corps Appropriations	116,812	74,100		0	3,900	48,800	0	0
24	TOTAL CAPITAL TRANSFERS	172,685	502,200		200,800	344,700	235,800	230,900	232,800
				STAFFING					
25	FULL-TIME EQUIVALENT EMP. (FTE) 5/	3,596	3,440		3,325	3,325	3,325	3,325	3,325

1/ Through the Draft Business Plan, Bonneville is exploring options with its customers and constituents to reduce its level of debt financing in order to both delay the exhaustion of the borrowing authority caps and improve Bonneville's debt-equity position. The options under consideration include: a) further reductions in capital spending through application of a capital budgeting process, b) revenue financing of roughly $15 million of transmission capital and $15 million of fish and wildlife capital per year, c) to the extent allowable, potentially shifting costs from the Transmission/Fish & Wildlife authority to the Conservation authority, and d) exploring alternative sources of capital, including the use of third-party financing to the greatest extent possible. The options to be adopted will be determined through process of developing the 95 Rate Case and the Final Business Plan.

2/ BPA's FY 1996 budget has been prepared in accordance with the Budget Enforcement Act (BEA) of 1990. Under this Act all BPA budget estimates are treated as mandatory and are not subject to the discretionary caps included in the BEA. These estimates support activities which are legally separate from discretionary activities and accounts. Thus, any changes to BPA estimates cannot be used to affect any other budget categories such as domestic discretionary, or defense discretionary which have their own legal dollar caps. During FY 1996, the administration will propose legislation giving Bonneville government corporation status as well as legislation which would transfer funding responsibility for the Mitchell Act Hatcheries to Bonneville, and allow Bonneville to pay those costs from rate-payer generated revenues. While these proposals do include requests for new legislative authorization, they do not have budget authority impacts, and thus do not subject Bonneville to Budget Enforcement "pay-as-you-go" tests regarding its revision of funding estimates.

3/ Borrowing Authority to Finance Other Obligations represents the use of (positive), or building up of (negative), deferred borrowing. Deferred borrowing is created when Bonneville uses cash from revenues to liquidate capital obligations in lieu of borrowing. This temporary use of cash-on-hand instead of borrowed funds creates the ability in future years to borrow money, when fiscally prudent, to liquidate revenue funded activities. The amount on this line, under the title "Borrowing Authority to Finance Other Obligations" represents the annual use, or creation of deferred borrowing. OMB has requested that Bonneville show this deferred borrowing as resource carried forward from year-to-year in the manner displayed here. It is important to note that the borrowing authority amount on line 17 "Borrowing Authority to Finance Capital Obligations" is the amount which is tracked by the Congressional Committees.

4/ Includes a projected $156 million capital transfer in FY 1995 representing an unscheduled amortization payment connected with receipts from sale of capacity to non-Federal participants in the AC Intertie transmission lines. Amount and year of this capital transfer are subject to change pending conclusion of the sale.

5/ FTE levels for FY 1995-2000 reflect Bonneville's submission to the Department of Energy.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL IN FY 1995 CONGRESSIONAL BUDGET STRUCTURE
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES
(in thousands of dollars)

BP-1 in FY95 Structure

		FY 1994		FY 1995		FY 1996		FY 1997	FY 1998	FY 1999	FY 2000
	TOTAL OBLIGATIONS/OUTLAYS	Obligations	Outlays	Obligations	Outlays	Obligations	Outlays	Obligations	Obligations	Obligations	Obligations
1	Residential Exchange	962,482	962,500	972,200	972,200	1,011,800	1,011,800	1,073,000	1,115,400	1,149,800	1,186,300
2	System Operations	36,436	32,800	41,700	38,900	41,500	41,500	42,300	44,000	45,600	47,400
3	[illegible]	71,214	72,900	84,300	80,800	82,900	82,900	86,100	87,400	91,400	94,200
4	[illegible]	224,630	225	178,400	212,200	182,400	182,400	129,000	123,800	121,500	116,400
5	[illegible] Council	8,090	7,900	8,500	8,500	8,600	8,600	9,100	9,500	9,800	10,100
6	[illegible]	369,672	376,400	407,600	392,800	402,400	402,400	416,600	428,500	432,200	443,800
7	Associated Project Costs	145,533	154,800	160,900	160,800	149,700	149,700	188,900	212,500	168,300	174,200
8	Energy Resources	928,870	1,148,713	1,044,100	1,077,800	1,039,900	1,046,900	1,113,700	1,164,400	1,275,500	1,299,300
9	Transmission System Development	143,823	146,700	156,600	141,500	160,400	152,400	220,300	210,800	180,200	213,200
10	System Maintenance	105,151	98,600	107,400	103,300	104,400	104,400	107,700	111,500	116,100	120,700
11	System Replacements	76,174	76,200	84,900	81,400	79,800	77,900	82,600	85,200	88,900	92,300
12	Associated Projects - Capital	22,150	18,400	26,100	23,400	25,300	25,300	16,400	15,900	29,400	46,400
13	Fish & Wildlife	88,008	64,000	87,300	71,700	87,100	89,500	85,400	87,400	87,700	88,100
14	Capital Equipment	12,876	12,900	13,400	13,400	13,300	13,300	12,500	12,700	13,200	15,000
15	Reimbursable	83,030	83,030	84,700	84,700	86,300	86,300	87,800	89,400	91,000	92,700
16	Capitalized Bond Premiums	15,579	0	14,600	14,600	0	0	0	0	0	0
17	TOTAL OBLIGATIONS/OUTLAYS	3,293,716	3,256,068	3,472,700	3,478,000	3,496,000	3,475,600	3,671,600	3,798,400	3,900,600	4,040,100

	REVENUES AND REIMBURSEMENTS	Accrued	Cash	Accrued	Cash	Accrued	Cash	Accrued	Accrued	Accrued	Accrued
18	Revenues	2,993,982	2,993,982	3,165,500	3,321,500	3,506,400	3,502,900	3,611,500	3,590,500	3,759,600	3,868,500
19	Reimbursements	83,030	83,030	84,700	84,700	86,300	86,300	87,800	89,400	91,000	92,700
20	TOTAL REVENUES & REIMBURSE.	3,077,012	3,077,012	3,250,200	3,406,200	3,592,700	3,589,200	3,699,300	3,679,900	3,850,600	3,961,200

	BUDGET AUTHORITY (NET)/OUTLAYS (NET)										
21	BUDGET AUTHORITY (NET)	167,698		147,100		(107,300)		(28,100)	118,600	60,000	78,900
22	OUTLAYS (NET)		179,056		74,600		(113,700)	(28,100)	118,600	60,000	78,900

NOTE: This table represents Bonneville's current FY 1996 Congressional submission in the structure used in the FY 1995 Congressional Budget. Since that time, Bonneville has undergone a major reorganization and has combined several of the old programs into new groupings. This new structure is reflected in the current FY 1996 submission. This table has been provided to show Bonneville's programs in the old structure, and can be compared to the new structure shown on previous pages.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL IN FY 1995 CONGRESSIONAL BUDGET STRUCTURE
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES

(in thousands of dollars)

EXPENSED OBLIGATIONS/OUTLAYS

	BP-2 in FY95 Structure	FY 1994 Obligations	FY 1994 Outlays	FY 1995 Obligations	FY 1995 Outlays	FY 1996 Obligations	FY 1996 Outlays	FY 1997 Obligations	FY 1998 Obligations	FY 1999 Obligations	FY 2000 Obligations
1	Residential Exchange	962,482	962,500	972,200	972,200	1,011,800	1,011,800	1,073,000	1,115,400	1,149,800	1,186,300
2	System Operations	36,436	32,800	41,700	38,900	41,500	41,500	42,300	44,000	45,600	47,400
3	Power Marketing	71,214	72,900	84,300	80,800	82,900	82,900	86,100	87,400	91,400	94,200
4	Power Scheduling	224,630	225	178,400	212,200	182,400	182,400	129,000	123,800	121,500	116,400
5	Planning Council	8,090	7,900	8,500	8,500	8,800	8,800	9,100	9,500	9,800	10,100
6	Interest	369,672	376,400	407,600	392,800	402,400	402,400	416,600	428,500	432,200	443,800
7	Associated Project Costs	145,533	154,800	160,900	160,800	149,700	149,700	188,900	212,500	168,300	174,200
8	Energy Resources	820,744	1,035,013	890,700	924,400	955,700	955,700	1,032,500	1,078,300	1,188,100	1,212,800
9	Transmission System Development	24,763	25,500	24,200	19,300	22,000	22,000	22,500	23,200	24,000	25,400
10	System Maintenance	105,151	98,600	107,400	103,300	104,400	104,400	107,700	111,500	116,100	120,700
11	Fish & Wildlife	56,637	43,500	64,300	47,300	70,100	70,100	70,200	70,400	70,700	71,100
12	TOTAL EXPENSED OBLIGATIONS/OUTLAYS	2,826,362	2,810,138	2,940,200	2,960,600	3,031,700	3,031,700	3,177,900	3,304,600	3,417,600	3,502,400
13	TOTAL REIMBURSABLE OBLIGATIONS/OUTLAYS	83,030	83,030	84,700	84,700	86,300	86,300	87,800	89,400	91,000	92,700

CAPITAL OBLIGATIONS/OUTLAYS

		FY 1994 Obligations	FY 1994 Outlays	FY 1995 Obligations	FY 1995 Outlays	FY 1996 Obligations	FY 1996 Outlays	FY 1997 Obligations	FY 1998 Obligations	FY 1999 Obligations	FY 2000 Obligations
14	Energy Resources	108,126	113,700	153,400	153,400	84,200	91,200	81,200	86,100	87,400	86,500
15	Transmission System Development	119,060	121,200	132,400	122,200	158,400	130,400	197,800	187,600	156,200	187,800
16	System Replacements	76,174	76,200	84,900	81,400	79,800	77,900	82,800	85,200	88,900	92,300
17	Associated Projects	22,150	18,400	26,100	23,400	25,300	25,300	16,400	15,900	29,400	46,400
18	Fish & Wildlife	31,369	20,500	23,000	24,400	17,000	19,400	15,200	17,000	17,000	17,000
19	Capital Equipment	12,876	12,900	13,400	13,400	13,300	13,300	12,500	12,700	13,200	15,000
20	Capitalized Bond Premium	15,579	15,500	14,600	14,600	0	0	0	0	0	0
21	**TOTAL CAPITAL INVESTMENTS**	**385,334**	**362,900**	**447,800**	**432,800**	**378,000**	**357,500**	**405,900**	**404,500**	**392,100**	**445,000**
22	**BORROWING AUTHORITY TO FINANCE CAPITAL OBLIGATIONS 1/**	**385,334**		**447,800**		**378,000**		**405,900**	**404,500**	**392,100**	**445,000**
23	**BORROWING AUTHORITY TO FINANCE OTHER OBLIGATIONS**	**(44,951)**		**201,500**		**(270,400)**		**(89,300)**	**(50,200)**	**(111,200)**	**(133,300)**
24	**TOTAL BORROWING AUTHORITY**	**340,383**		**649,300**		**107,600**		**316,600**	**354,300**	**280,900**	**311,700**

NOTE: This table represents Bonneville's current FY 1996 Congressional submission in the structure used in the FY 1995 Congressional Budget. Since that time, Bonneville has undergone a major reorganization and has combined several of the old programs into new groupings. This new structure is reflected in the current FY 1996 submission. This table has been provided to show Bonneville's programs in the old structure, and can be compared to the new structure shown on previous pages.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
BPA STATUS of BORROWING
(in thousands of dollars)

BP-4A

	FY 1994				FY 1995				FY 1996			
	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing
Cum. - Start-of-Year: 1974 Act	1,938,434		1,790,242		2,159,769		1,983,569		2,092,069		1,900,869	
Start-of-Year: 1980 Act	637,838		555,144		745,964		668,844		833,364		756,244	
Start of-Year: Total	2,576,272	2,533,971	2,345,386	2,331,873	2,905,733	2,863,432	2,652,413	2,616,500	2,925,433	2,883,132	2,657,113	2,657,100
Plus: Annual Increase												
Annual Increase: 1974 Act	277,208		249,200		294,400		279,400		293,800		266,300	
Annual Increase: 1980 Act	108,126		113,700		153,400		153,400		84,200		91,200	
Annual Borrowing A. Increase	385,334	385,334	362,900		447,800	447,800	432,800		378,000	378,000	357,500	
Treasury Borrowing (Cash)				340,500				468,700				297,000
Less:												
Bond Amortization: 1974 Act	55,873		55,873		362,100 1/		362,100 1/		152,700		152,700	
Bond Amortization: 1980 Act	0		0		66,000		66,000		48,100		48,100	
Total BPA Bond Amortization	55,873	55,873	55,873	55,873	428,100	428,100	428,100	428,100	200,800	200,800	200,800	200,800
Net Increase/(Decrease):												
1974 Act	221,335		193,327		(67,700)		(82,700)		141,100		113,600	
1980 Act	108,126		113,700		87,400		87,400		36,100		43,100	
Total	329,461	329,461	307,027	284,627	19,700	19,700	4,700	40,600	177,200	177,200	156,700	96,200
Cum. - End-of-Year: 1974 Act	2,159,769		1,983,669		2,092,069		1,900,869		2,233,169		2,014,469	
End-of-Year: 1980 Act	745,964		668,844		833,364		756,244		869,464		799,344	
End-of-Year: Total	2,905,733	2,863,432	2,652,413	2,616,500	2,925,433	2,883,132	2,657,113	2,657,100	3,102,633	3,060,332	2,813,813	2,753,300
Remaining Leg. Borrowing A.:												
1974 Act	340,231				407,931				266,831			
1980 Act	504,036				416,636				380,536			
Total Borrowing Authority	844,267	886,568		1,133,500	824,567	866,868		1,092,900	647,367	689,668		996,700
Total Legislated Borrowing A.	3,750,000	3,750,000		3,750,000	3,750,000	3,750,000		3,750,000	3,750,000	3,750,000		3,750,000

1/ Includes a projected $156 million capital transfer in FY 1995 representing an unscheduled amortization payment connected with receipts from sale of capacity to non Federal participants in the AC Intertie transmission lines. Amount and year of this capital transfer are subject to change pending conclusion of the sale.

Note: Through the Draft Business Plan, Bonneville is exploring options with its customers and constituents to reduce its level of debt financing in order to both delay the exhaustion of the borrowing authority caps and improve Bonneville's debt-equity position. The options under consideration include: a) further reductions in capital spending through application of a capital budgeting process, b) revenue financing of roughly $15 million of transmission capital and $15 million of fish & wildlife capital per year, c) to the extent allowable, potentially shifting costs from the Transmission/Fish & Wildlife authority to the Conservation authority, and d) exploring alternative sources of capital, including the use of third party financing to the greatest extent possible. The options to be adopted will be determined through process of developing the 95 Rate Case and the Final Business Plan.

BPA's policy is to limit cumulative Treasury borrowing to the lower of: 1) estimated cumulative capital expenditures or 2) cumulative annual borrowing authority that has been apportioned and obligated.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
BPA STATUS of BORROWING

(in thousands of dollars)

BP-4B

	FY 1997				FY 1998				FY 1999			
	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing
Cum. - Start-of-Year: 1974 Act	**2,233,169**		**2,014,469**		**2,400,469**		**2,181,769**		**2,587,469**		**2,368,769**	
Start-of-Year: 1980 Act	**869,464**		**799,344**		**818,664**		**748,544**		**886,364**		**816,244**	
Start-of-Year: Total	3,102,633	3,060,332	2,813,813	2,753,300	3,219,133	3,176,832	2,930,313	2,769,400	3,473,833	3,431,532	3,185,013	2,956,500
Plus: Annual Increase												
Annual Increase: 1974 Act	**324,600**		**324,600**		**318,400**		**318,400**		**304,700**		**304,700**	
Annual Increase: 1980 Act	**81,300**		**81,300**		**86,100**		**86,100**		**87,400**		**87,400**	
Annual Borrowing A. Increase	406,900	405,900	405,900		404,500	404,500	404,500		392,100	392,100	392,100	
Treasury Borrowing (Cash)				305,500				336,900				262,900
Less:												
Bond Amortization: 1974 Act	**157,300**		**157,300**		**131,400**		**131,400**		**165,300**		**165,300**	
Bond Amortization: 1980 Act	**132,100**		**132,100**		**18,400**		**18,400**		**20,500**		**20,500**	
Total BPA Bond Amortization	289,400	289,400	289,400	289,400	149,800	149,800	149,800	149,800	185,800	185,800	185,800	185,800
Net Increase/(Decrease):												
1974 Act	**167,300**		**167,300**		**187,000**		**187,000**		**139,400**		**139,400**	
1980 Act	**(50,800)**		**(50,800)**		**67,700**		**67,700**		**68,900**		**68,900**	
Total	116,500	116,500	116,500	16,100	254,700	254,700	254,700	187,100	208,300	208,300	208,300	77,100
Cum. - End-of-Year: 1974 Act	**2,400,469**		**2,181,769**		**2,587,469**		**2,368,769**		**2,726,869**		**2,508,169**	
End-of-Year: 1980 Act	**818,664**		**748,544**		**886,364**		**816,244**		**953,264**		**883,144**	
End-of-Year: Total	3,219,133	3,176,832	2,930,313	2,769,400	3,473,833	3,431,532	3,185,013	2,956,500	3,680,133	3,637,832	3,391,313	3,033,600
Remaining Leg. Borrowing A.:												
1974 Act	**99,831**				**(87,469)**				**(226,869)**			
1980 Act	**431,336**				**363,636**				**296,736**			
Total Borrowing Authority	530,867	573,168		980,600	276,167	318,468		793,500	69,867	112,168		716,400
Total Legislated Borrowing A.	3,750,000	3,750,000		3,750,000	3,750,000	3,750,000		3,750,000	3,750,000	3,750,000		3,750,000

Note: Through the Draft Business Plan, Bonneville is exploring options with its customers and constituents to reduce its level of debt financing in order to both delay the exhaustion of the borrowing authority caps and improve Bonneville's debt-equity position. The options under consideration include: a) further reductions in capital spending through application of a capital budgeting process, b) revenue financing of roughly $15 million of transmission capital and $15 million of fish & wildlife capital per year, c) to the extent allowable, potentially shifting costs from the Transmission/Fish & Wildlife authority to the Conservation authority, and d) exploring alternative sources of capital, including the use of third-party financing to the greatest extent possible. The options to be adopted will be determined through process of developing the 95 Rate Case and the Final Business Plan.

BPA's policy is to limit cumulative Treasury borrowing to the lower of: 1) estimated cumulative capital expenditures or 2) cumulative annual borrowing authority that has been apportioned and obligated.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
BPA STATUS of BORROWING
(in thousands of dollars)

BP-4C

	FY 2000			
	Capital Obligations	Annual Borrowing Authority	Capital Expend.	Treasury Borrowing
Cum. - Start-of-Year: 1974 Act	2,726,869		2,508,169	
Start-of-Year: 1980 Act	953,264		883,144	
Start-of-Year: Total	3,680,133	3,637,832	3,391,313	3,033,600
Plus: Annual Increase				
Annual Increase: 1974 Act	358,500		358,500	
Annual Increase: 1980 Act	86,500		86,500	
Annual Borrowing A. Increase	445,000	445,000	445,000	
Treasury Borrowing (Cash)				293,500
Less:				
Bond Amortization: 1974 Act	162,100		162,100	
Bond Amortization: 1980 Act	45,400		45,400	
Total BPA Bond Amortization	207,500	207,500	207,500	207,500
Net Increase/(Decrease):				
1974 Act	196,400		196,400	
1980 Act	41,100		41,100	
Total	237,500	237,500	237,500	86,000
Cum. - End-of-Year: 1974 Act	2,923,269		2,704,569	
End-of-Year: 1980 Act	994,364		924,244	
End-of-Year: Total	3,917,633	3,875,332	3,628,813	3,119,600
Remaining Leg. Borrowing A.:				
1974 Act	(423,269)			
1980 Act	255,636			
Total Borrowing Authority	(167,633)	(125,332)		630,400
Total Legislated Borrowing A.	3,750,000	3,750,000		3,750,000

Note: Through the Draft Business Plan, Bonneville is exploring options with its customers and constituents to reduce its level of debt financing in order to both delay the exhaustion of the borrowing authority caps and improve Bonneville's debt-equity position. The options under consideration include: a) further reductions in capital spending through application of a capital budgeting process, b) revenue financing of roughly $15 million of transmission capital and $15 million of fish & wildlife capital per year, c) to the extent allowable, potentially shifting costs from the Transmission/Fish & Wildlife authority to the Conservation authority, and d) exploring alternative sources of capital, including the use of third-party financing to the greatest extent possible. The options to be adopted will be determined through process of developing the 95 Rate Case and the Final Business Plan.

BPA's policy is to limit cumulative Treasury borrowing to the lower of: 1) estimated cumulative capital expenditures or 2) cumulative annual borrowing authority that has been apportioned and obligated.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
BPA CASH FLOW
(in thousands of dollars)

BPA Cash From Current Year Operations	FY 1993 /1	FY 1994 /1	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
1. Net Revenues 2/	(297,000)	(56,800)	(16,300)	207,000	200,800	55,400	47,700	56,300
2. Expenses Not Requiring Cash	220,100	226,300	242,700	270,700	286,000	300,800	315,900	331,500
3. Adjustments to a Cash Basis	(94,100)	32,700	99,600	(3,500)	(3,500)	(3,500)	(3,500)	(3,500)
4. Cash Provided by Operating Activities	(171,000)	202,200	326,000	474,200	483,300	352,700	360,100	384,300
5. Amortization of BPA Bonds	(223,700)	(55,900)	(428,100)	(200,800)	(289,400)	(149,800)	(185,800)	(207,500)
6. Amortization of Appropriations/Irrigation Assist.	(25,300)	(135,100)	(42,800)	0	(93,500)	(135,300)	(45,100)	(25,300)
7 **Current Year Cash Surplus/(Deficit)**	(420,000)	11,200	(144,900)	273,400	100,400	67,600	129,200	151,500
BPA Cash Balance								
8. Beginning Cash Balance	445,200	207,300	196,100	87,100	300,000	300,000	300,000	300,000
9. Current Year Cash Surplus (/Deficit)	(420,000)	11,200	(144,900)	273,400	100,400	67,600	129,200	151,500
10. Cash Used for Investment Activities 3/	(467,900)	(362,900)	(432,800)	(357,500)	(405,900)	(404,500)	(392,100)	(445,000)
11. Cash From Borrowing 4/	650,000	340,500	468,700	297,000	305,500	336,900	262,900	293,500
12. **Ending Cash Balance 4/**	**207,300**	**196,100**	**87,100**	**300,000**	**300,000**	**300,000**	**300,000**	**300,000**
13. Deferred Borrowing Available 4/	13,500	35,900	0	60,500	160,900	228,500	357,700	509,200
14. Total Reserves 4/	**220,800**	**232,000**	**87,100**	**360,500**	**460,900**	**528,500**	**657,700**	**809,200**

1/ FY 1993 reflects BPA portion of Federal Columbia River Power Systems (FCRPS) final audited results. FY 1994 reflects unaudited results.

2/ FY 1995 net revenue estimate is based on the 4th Quarter Review. FY 1996-2000 planned net revenues are based on the Initial Proposal for the 1995 Rate Case. Actual revenues are very uncertain and are heavily influenced by customer firm loads and aluminum prices; runoff volume and constraints on operations of hydroelectric facilities in the Columbia basin; fossil fuel prices; thermal plant performance and costs; etc.

3/ Represents capital expenditures. Includes capitalized bond premiums and actual retirements.

4/ Bonneville's policy is to limit Treasury borrowing to the lower of 1) estimated cumulative capital expenditures or 2) cumulative annual borrowing authority that has been apportioned and obligated. "Deferred Borrowing Available" (line 13) reflects the amount that Bonneville could borrow under these limits. Actual Treasury borrowing (line 11) and Ending Cash Balance (line 12) will vary from the forecasts shown depending on net revenues, Treasury interest rates and other cash management factors. Cash From Borrowing (line 11) could be higher such that cash balances at the end of each year equal Total Reserves (line 14). The estimates on the Cash From Borrowing line (line 11) assume that BPA's existing borrowing authority cap will be increased.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

TREASURY PAYMENTS
(in thousands of dollars)

		FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
A.	**INTEREST ON BONDS & APPROPRIATIONS**							
	Bonneville Bond Interest							
1	Bonneville Bond Interest (net)	149,284	181,800	170,100	174,300	179,200	190,800	203,600
2	AFUDC 1/	15,500	13,000	9,500	11,700	14,900	14,700	13,000
	Appropriations Interest							
3	Bonneville	55,276	55,400	51,300	48,400	48,400	47,400	46,300
4	Corps of Engineers 2/	131,063	134,700	134,400	144,900	151,200	147,700	147,700
5	Lower Snake River Comp. Plan	2,218	2,700	15,800	16,000	16,000	16,000	16,000
6	Bureau of Reclamation Interest	31,831	33,000	30,800	33,000	33,700	30,200	30,200
7	**Total Bond and Approp. Interest 3/**	**385,172**	**420,600**	**411,900**	**428,300**	**443,400**	**446,800**	**456,800**
B.	**ASSOCIATED PROJECT COST**							
8	Bureau of Reclamation Amortization	18,310	21,400	0	13,100	49,300	0	0
9	Bureau of Reclamation Irrigation Assistance	0	0	0	25,100	0	0	0
10	Bureau of Rec. Operations & Maint	33,943	39,400	38,500	38,500	42,600	44,100	45,700
11	Corps of Eng. Operations & Maintenance	81,694	85,900	81,400	81,400	88,900	91,400	94,600
12	L. Snake River Comp. Plan Oper.	11,569	14,200	14,500	14,900	15,200	15,700	16,100
13	Colville Settlement	0	0	15,300	15,900	16,500	17,100	17,800
14	4h10c Credit for Additional ESA Costs	(18,700)	0	0	0	0	0	0
15	**Total Assoc. Project Costs**	**126,816**	**160,900**	**149,700**	**188,900**	**212,500**	**168,300**	**174,200**
C.	**CAPITAL TRANSFERS**							
	Amortization							
16	Bonneville Bonds	55,873	272,100	200,800	289,400	149,800	185,800	207,500
17	Third AC - Non-Federal Participant Pmt. 4/	0	156,000	0	0	0	0	0
18	Corps of Engineers	116,812	74,100	0	3,900	48,800	0	0
19	Lower Snake River Comp. Plan	0	0	0	0	0	0	0
20	Bonneville Appropriations	0	0	0	51,400	37,200	45,100	25,300
21	**Total Capital Transfers**	**172,685**	**502,200**	**200,800**	**344,700**	**235,800**	**230,900**	**232,800**
22	**TOTAL TREASURY PAYMENTS (LINES 7 + 15 + 21)**	**684,673**	**1,083,700**	**762,400**	**961,900**	**891,700**	**846,000**	**863,800**

1/ This interest cost is capitalized and included in Bonneville's Transmission System and Associated Projects Capital programs. AFUDC is financed through the sale of bonds.

2/ Includes interest on construction funding for Corps of Engineers (Corps) fish bypass facilities at Corps dams in the Columbia River Basin, including Lower Monumental, Ice Harbor, and The Dalles dams, as called for in the Fish Spillway Memorandum of Agreement approved on April 10, 1989.

3/ Total Bond and Appropriated Interest on this table differs from the amount shown in the Interest Program by the AFUDC amount.

4/ Includes a projected $156 million capital transfer in FY 1995 representing an unscheduled amortization payment connected with receipts from sale of capacity to non-Federal participants in the AC Intertie transmission lines. Amount and year of this capital transfer are subject to change pending conclusion of the sale.

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BONNEVILLE POWER ADMINISTRATION

FISH AND WILDLIFE INVESTMENTS CROSSCUT

	FIRST FUNDED BY:	FY 1994		FY 1995		FY 1996	
CAPITAL INVESTMENTS							
Fish and Wildlife (Outlays) 1/	BPA	25.0	---	23.1	---	17.1	---
Associated Projects (Federal Hydro) 2/	COE	62.6	---	22.6	---	79.8	---
TOTAL CAPITAL INVESTMENTS		87.6	87.6	45.7	45.7	96.9	96.9
PROGRAM OPERATING EXPENSES							
BPA Fish and Wildlife Program (Outlays) 1/							
NON-ESA Activities	BPA	41.4	---	40.3	---	52.5	---
ESA Activities	BPA	10.0	---	20.9	---	17.6	---
SUBTOTAL		51.4	51.4	61.2	61.2	70.1	70.1
BPA POWER PURCHASES FOR FISH ENHANCEMENT (NET)							
Upper Columbia River Water Budget	BPA	40.0	40.0	---	---	---	---
Spill for Juvenile/Adult Passage 3/	BPA	5.7	5.7	---	---	---	---
Flow Augmentation 4/	BPA	66.0	83.0	---	---	---	---
Reduced Forebay Levels	BPA	0.0	0.0	---	---	---	---
ESA - NMFS Fund (Additional Spill for Juvenile Passage)	BPA	0.0	0.0	---	---	---	---
SUBTOTAL 5/		111.7	128.7	115.0	191.0	125.0	201.0
ASSOCIATED PROJECTS (FEDERAL HYDRO) 6/							
O&M Lower Snake River Hatcheries	USFWS	12.4	---	14.2	---	14.5	---
O&M Corps	COE	16.9	---	20.8	---	20.8	---
O&M Bureau (hatchery effective FY 1992)	BOR	1.3	---	1.3	---	1.4	---
SUBTOTAL		30.6	30.6	36.3	36.3	36.7	36.7
OTHER (NW POWER PLANNING COUNCIL)	BPA	4.3	4.3	4.3	4.3	4.4	4.4
TOTAL PROGRAM OPERATING EXPENSES		198.0	215.0	216.8	292.8	236.2	312.2
PROGRAM RELATED FIXED EXPENSES 7/							
Interest Expense	BPA	46.1	---	46.2	---	52.8	---
Amortization Expense	BPA	7.3	---	9.2	---	10.6	---
Depreciation Expense	BPA	8.4	---	8.9	---	9.4	---
TOTAL PROGRAM FIXED EXPENSES		61.8	61.8	64.3	64.3	72.8	72.8
GRAND TOTAL PROGRAM EXPENSES		259.8	276.8	281.1	357.1	309.0	385.0
FOREGONE REVENUES							
Upper Columbia River Water Budget	BPA	0.0	0.0	---	---	---	---
Spill for Juvenile/Adult Passage 3/	BPA	32.0	33.0	---	---	---	---
Flow Augmentation	BPA	0.0	0.0	---	---	---	---
Reduced Forebay Levels 8/	BPA	25.0	25.0	---	---	---	---
ESA - NMFS Fund (Additional Spill for Juvenile Passage)	BPA	5.0	5.0	---	---	---	---
SUBTOTAL 5/		62.0	63.0	0.0	0.0	0.0	0.0
TOTAL PRGRAM EXPENSES & FOREGONE REVENUES		321.8	339.8	281.1	357.1	309.0	385.0

THIS WORKSHEET REFLECTS WORK IN PROGRESS BASED ONLY ON COSTS ASSOCIATED WITH THE PRIOR 1994 OPERATIONS AND ASSUMPTIONS AS OF AUGUST 1994 THE WORKSHEET DOES NOT REFLECT INITIATIVES AND CHANGES IN OPERATIONS REFLECTED IN THE FOOTNOTES TO THIS TABLE.

DEPARTMENT OF ENERGY
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BONNEVILLE POWER ADMINISTRATION

Notes - Fish and Wildlife Investments Crosscut Table

General

These notes support the table that displays the Pacific Northwest electric utility ratepayers' investment in fish and wildlife activities within the Columbia River Basin. The table shows the annual expense for all fish and wildlife investments funded under the Federal Columbia River Power System from a rate making, revenue requirement perspective. **The table covers the Fiscal Years (FY) 1994 to 1996 and ties to assumptions as of August 1994. Amounts for FY 1994 are estimated actuals. The costs shown in the table reflect budget outlays (rather than obligations) for the years shown. These costs are understated and will most likely increase substantially once the NMFS Salmon Recovery Plan is finalized and the NMFS Biological Opinion is issued, both scheduled to occur in January 1995.** The title "Capital Investments," shown at the top of the table, is presented for information. The annual expense (interest, amortization, and depreciation) associated with these capital investments is shown under the title "Program Related Fixed Expenses."

- The table represents a "revenue requirement" view of BPA's fish and wildlife funding responsibilities. All expenses in these tables are paid for by BPA's ratepayers.
- Legislation will be introduced to transfer responsibility for funding the operations and maintenance of the Mitchell Act hatcheries from the NMFS to BPA starting in FY 1996. Annual expense for this activity is $14.1 million. These funds are not included in this table.
- Power purchases and foregone revenues are displayed as ranges that reflect 50-year studies of "good water" conditions on the low end and "poor water" conditions on the high end of the range. Credit for the Northwest Power Act Section 4(h)(10)(C) offset is not reflected in the FY 1994 estimates. FY 1995 and FY 1996 ranges are based on the NMFS 1994 - 1998 Biological Opinion (currently under review for reconsideration and re-evaluation). **These costs are expected to be substantially higher as a result of discussions now underway concerning Endangered Species Act measures.**

Footnotes - Specific

1/ Based on BPA outlays. Outlays for FY 1995 through 1996 are assumed to be the same as obligations.

2/ Based on Corps of Engineers Plant-In-Service assumptions as of December 1994. These estimates do reflect new initiatives such as surface bypass and collection prototype development, delay of drawdown tests, and the delay in the installation of screens at The Dalles Dam.

3/ The estimate for FY 1994 reflects NMFS's 1994 - 1998 Biological Opinion spill levels after June 20 and increased levels of spill May 11 - June 20.

4/ The estimate for FY 1994 reflects NMFS's 1994 - 1998 Biological Opinion flow augmentation volumes plus the additional releases from Dworshak (to elevation 1490 feet) and Upper Columbia reservoirs (550 MAF).

5/ After FY 1994, the Subtotal for BPA Power Purchases for Fish Enhancement reflects the sum of net costs for power purchases and foregone revenues since a breakdown was not available at the time the table was produced.

6/ Amounts shown reflect the fish and wildlife costs assigned for repayment to the Treasury by power. COE O&M estimates could increase as a result of new initiatives (see Footnote 2).

7/ Interest expense includes BPA's interest on bonds and interest on the Federal investment in fish and wildlife assigned to power. Amortization reflects BPA's bonds and depreciation reflects the Federal investment.

8/ The estimate for FY 1994 reflects the operation to minimum operating pools at the four Lower Snake River projects and John Day at minimum irrigation pool as described in the NMFS's 1994 - 1998 Biological Opinion. BPA anticipates higher costs in FY 1995 and FY 1996 once a revised NMFS Biological Opinion is finalized in January 1995.

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DEPARTMENT OF ENERGY
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SUMMARY OF CHANGES IN CAPITAL COMMITMENTS AND BORROWING AUTHORITY, FY 1995 TO FY 1996
(in thousands of dollars)

FY 1995 New Borrowing Authority 1/	447,800
FY 1995 Capital Investments	447,800
Marketing, Conservation & Production:	
- Decreased funding of centrally designed programs resulting in greater sharing of costs with regional utilities	(132,000)
- Increased funding to acquire planned energy savings from demand side management programs	62,800
Transmission Services:	
- Decreased level of Area and Customer Service activity	(2,700)
- Increased level of Main Grid Transmission development	28,900
- Reduced AFUDC due to lower level of construction work in progress	(800)
- Reduced funding for system replacements	(2,500)
- Increased funding for first phase of a new building for the laboratories	19,400
- Decreased funding for additions and upgrades with completion of Munro Control Center expected in FY 1996	(18,800)
Environment/Fish and Wildlife:	
- Continue construction of various anadromous and resident fish facilities at decreased levels	(8,600)
Capital Equipment:	
- Reduced capital ADP equipment needs	(100)
Associated Projects Capital:	
- Start two additional BPA direct funded capital improvements at Bureau of Reclamation facilities	(800)
Capitalized Bond Premiums:	
- Bonneville Treasury bond refinancing not anticipated for FY 1995	(14,600)
FY 1996 Capital Investments	378,000
FY 1996 New Borrowing Authority	378,000

1/ This estimate is consistent with House and Senate report language accompanying the FY 1995 Appropriations Act.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

OVERVIEW OF KEY ACTIVITY SUMMARIES

BPA's Key Activity Summaries are divided into two sections, reflecting their economic character and source of funding.

The first section, Capital Programs, includes BPA's five capital budget programs providing for capital investments in electric utility and general plant associated with the Federal Columbia River Power System's (FCRPS) transmission services, capital equipment, hydroelectric projects, conservation, and capital investments in environment, fish and wildlife. These five programs will require budget obligations and new borrowing authority of $378 million in FY 1996. A sixth category reflects the premium BPA will incur to refinance bonds sold to the Treasury for FCRPS capital investments.

BPA's second section of Key Activity Summaries, entitled Annual Operating Expenses, includes BPA's 8 expense and capital transfer programs financed by power sales and transmission services revenues and BPA reimbursable activities funded by benefiting entities. For FY 1996, BPA's revenue funded programs will require budget obligations of $3,031.7 million. Reimbursable activities are budgeted at $86.3 million, and capital transfers are estimated at $200.8 million for FY 1996.

Budget levels for the Capital Programs are tabulated, and expenses are shown on the BPA Current Services Summary printed earlier in this budget proposal. Since BPA has four budget programs with both capital and expense components (Transmission Services ; Marketing, Conservation & Production; Associated Projects; and Environment/Fish & Wildlife), the capital and expense components of these four programs must be combined for total program requirements. The total program requirements of all BPA programs will include estimated budget obligations of $3,496 million in FY 1996.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Marketing, Conservation and Production - Capital

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 requires BPA to treat conservation as the region's highest priority resource in planning to meet the Administrator's load-serving obligations. The Conservation Program provides for acquisition of energy resources through installation of cost-effective conservation measures for existing homes and businesses, for new residential and commercial construction, industrial technology, commercial equipment, and residential appliances. The energy produced by the measures is based on the acquisition component in each of the program areas and energy use impacts from pilot or demonstration programs.

In formulating the FY 1996 Conservation Program, BPA examined program levels in the context of current load forecasts, levels of program participation, and the emphasis placed on conservation measures in new construction; pilot and demonstration programs; and evaluation efforts called for by the Northwest Power Planning Council's Northwest Conservation and Electric Power Plan. The financial impact of all the program proposals on the BPA wholesale power rates played a major factor in determining the FY 1996 program levels reflected here.

The program levels reflect the fact that BPA has deficits in the planning period and plans to meet load growth with those programs with the most cost-effective energy conservation, renewables and other generation resources. BPA also plans to shift from total reliance on centrally-designed programs to a mix of centrally-designed and utility-designed programs and other vehicles.

The megawatt targets presented in the Activity Descriptions are estimates of the incremental savings to be achieved within the fiscal year. The megawatt actuals presented in the Activity Descriptions are estimates of the incremental savings that were achieved based on the assumptions for the beginning of FY 1994.

II. A. Summary Table: Marketing, Conservation and Production - Capital

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Existing Activities	$ 108,126	$ 137,900	$ 10,700	-92%
Marketing Transformation	- -	15,500	10,700	-31%
DSM Products and Services	- -	- -	2,200	- -
Energy Service Charge	- -	- -	60,600	- -
TOTAL Marketing, Conservation and Production - Capital	$ 108,126	$ 153,400	$ 84,200	-45%

III. Activity Descriptions: Marketing, Conservation and Production - Capital

Program Activity	FY 1994	FY 1995	FY 1996
Existing Activities	Existing Activities estimated to acquire 29.6 average megawatts from activities in FY 1994. $108,126	Existing Activities estimated to acquire 35.8 average megawatts from activities in FY 1995. $137,900	Existing Activities estimated to acquire 52 average megawatts from activities in FY 1996. $10,700
Marketing Transformation		Market Transformation activities are estimated to acquire 30 average megawatts for FY 1995. $15,500	Market Transformation activities are estimated to acquire 30 average megawatts for FY 1996. $10,700
DSM Products and Services			DSM Products and Services activities are estimated to acquire 60 average megawatts for FY 1996. $2,200
Energy Service Charge			Energy Service Charge activities are estimated to acquire 50 average megawatts for FY 1996. $60,600
Marketing, Conservation and Production - Capital	$108,126	$153,400	$84,200

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Transmission Services - Capital

Transmission Services provides for planning, design, and construction of transmission line, substation and system control additions, system replacements, and enhancements to the transmission system of the Federal Columbia River Power System (FCRPS) in the Pacific Northwest.

The program provides for all additions, upgrade, and replacements to the Federal transmission system in the Pacific Northwest, allowing reliable service to be provided to Northwest industrial users and utility customers. The transmission system also provides for the sale and exchange of power to and from the region. There are five basic kinds of BPA facilities: 1) Main Grid, for bulk power transmission, mostly 230-kV and above; 2) Area and Customer service, 230-kV and below which provide the substations and links between BPA and its customers; 3) Upgrades and Additions, which include additions and enhancements for the control of the power transmission system as well as miscellaneous substation and transmission line additions; 4) Other Capital Additions, which includes preliminary engineering, major new buildings not associated with the transmission system itself, allowance for funds used during construction (AFUDC) and expense-to-capital transfers; and 5) Capital Replacements, which includes the replacement of transmission line, substation, system control and protection equipment, tools and equipment, and general facilities for the transmission system.

The major focus of FY 1996 Transmission Services is to provide facilities required to satisfy system reliability in light of incremental load growth at a number of locations. Specifically, in FY 1996, the design and major material acquisitions will begin for the Eastern Washington Reinforcement. This will include the construction of approximately 165 miles of 500-kV transmission line, and associated reactive support and substation terminal equipment. This transmission system addition is needed to provide east-west energy transfer capability east of Spokane, Washington.

System replacements provide for planning, design, materials, and construction work to replace transmission line, substation, system protection, control system tools and equipment, and general facilities for the transmission system. System replacements implement the strategies identified in the BPA Operations, Maintenance, and Replacement 10-Year Plan. The main objective of the plan is to replace obsolete and maintenance intensive facilities and equipment, and reduce catastrophic equipment failure by 1) continued emphasis on replacement of control and communications equipment, 2) replacement of high voltage transformers and power circuit breakers which are at or near the end of their useful life, and 3) continued levelized replacement for all other existing equipment and facilities affecting the safety and reliability of the transmission system.

During FY 1996, BPA plans to continue engineering and construction on substation and line facilities currently underway. A variety of upgrades and additions to existing substation and line facilities are scheduled for energization in FY 1996. Specifically, the energization of the new Munro Control Center, near Spokane, Washington, is planned for December, 1996. This will include the completion of the building, the completion of a major new microwave radio system and fiber optic system, and the completion of associated control computers.

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II. A. Summary Table: Transmission Services - Capital

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Allowance for Funds Used During Construction	--	8,000	7,200	-10%
Main Grid	50,837	45,200	74,100	64%
Area and Customer Services	15,302	15,600	12,900	-17%
Upgrades and Additions	38,520	59,700	40,900	-31%
System Replacements	72,983	67,200	64,700	-4%
All Other	14,401	3,900	23,300	497%
TOTAL Transmission Services - Capital	192,043	199,600	223,100	12%

III. Activity Descriptions: Transmission Services - Capital

Program Activity	FY 1994	FY 1995	FY 1996
Allowance for Funds Used During Construction	Allowance for Funds Used During Construction (AFUDC) represents capitalized interest costs on construction work-in-progress. For FY 1994, actual AFUDC cost has been allocated to specific projects for a net effect of $0.0 in this budget category.	Allowance for Funds Used During Construction (AFUDC) represents estimated requirement for capitalized interest costs on construction work-in-progress.	Allowance for Funds Used During Construction (AFUDC) represents estimated requirement for capitalized interest costs on construction work-in-progress.
	$0	$8,000	$7,200
Main Grid	Complete construction of the Third AC Intertie and Alvey Meridian 500-kV facilities. This 4800-MW capacity addition was energized 12/93. Complete construction and energize Static VAR compensation. These additions assure voltage stability	Begin design and major material acquisition of the Bellingham, Washington area system reinforcement. This consists of a power transformer and transmission line additions to prevent system overloads in the northwest Washington area near the Canadian	Continue design and major material acquisition of the Bellingham, Washington area system reinforcement. Begin design and major material acquisition for the Eastern Washington reinforcement. This consists of 165 miles of 500-kV transmission line and associated

Main Grid (continued)	in the Portland area and the Puget Sound area during heavy winter loading conditions. Continue preliminary engineering and environmental analysis activities for transmission system additions. Continue design of various other system reactive and system efficiency improvements.	border. Continue preliminary engineering and environmental analysis activities for transmission system additions. Continue design of various other system reactive and system efficiency improvements.	substation and reactive additions. These additions are necessary to increase Bonneville's east-west transfer capacity to meet anticipated loads. Continue preliminary engineering and environmental analysis activities for transmission system additions. Continue design of various other system reactive and system efficiency improvements.
	$50,837	$45,200	$74,100
Area and Customer Service	Continue work on various customer service designs, including Albany, Oregon area transformer, Hungry Horse line rebuild, Minidoka Area Service, and Klickitat Area Support. Also continue other miscellaneous customer service projects.	Complete construction of designs issued in FY 1994. Begin design on tri-cites area reinforcement and the Tri-Cities, Montana additions. Continue designs on other miscellaneous customer service projects.	Continue construction on the tri-cites area reinforcement and the Columbia Falls addition. Begin design on the LaGrande, Oregon transformer support. Continue designs on other miscellaneous customer service projects.
	$15,302	$15,600	$12,900
Upgrades and Additions	Begin the design of the new Munro Control Center in Spokane, Washington. This control center is to replace the Eastern Control Center in Moses Lake, Washington. The contract for the building was awarded, design has started on the software conversion for the control center computers. Design has begun and	Continue design on the control centers and associated microwave radio communications. Energize the first 120 miles of fiber optic communications. Begin design on phase 2 of the operational data network, a system that will use wide area network technology to link together transmission system facilities. Begin design of the	Complete construction and testing of the Munro Control Center, with its associated communications and control computers. The actual energization is expected in December 1996, with only testing and commissioning left for FY 1997. Continue with the design of the microwave communications system replacement in Western Montana.

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Upgrades and Additions (continued)	major materials procurements initiated for a new digital microwave system. Also, this marks the first phase of a plan to replace analog microwave radio. This year begin the design of approximately 300 miles of long distance fiber optic. Continue design and construction of circuit breaker and other transmission line additions.	microwave communications system replacement in Western Montana. This will likely be a combination of digital microwave and fiber optics. Continue design and construction of circuit breaker and other transmission line additions.	Continue design and construction of circuit breaker and other transmission line additions.
	$38,520	$59,700	$40,900
System Replacements	Major accomplishments include the Kalispell and Longview maintenance headquarters buildings, the Ross oil sampling and flushing facility, 15 oil tank removals, 4-500-kV transformer replacements, 9-500-kV breakers or surge arresters and 51 lower voltage breaker replacements, 3 annunciator and 7 relay replacements, SICS replacement at 6 terminals, SCADA replacement at 1 terminal, and 4 engine generator replacements.	Major accomplishments include the last 11 oil tank removals, 2-500-kV transformer replacements, purchase and installation of a spare 180 MVAR reactor, 11-500-kV breakers or surge arresters and 49 lower voltage breaker replacements, 1 annunciator and 19 relay replacements, SICS replacement at 3 terminals, 6 oscillograph replacements, SCADA replacement at 3 terminals, and radio replacements at 11 sites.	Major accomplishments include facility improvements at 5 sites, access control at the Celilo DC terminal, 2-500-kV transformer replacements, 7-500-kV breakers or surge arresters and 49 lower voltage breaker replacements, 5 annunciators and 14 relay replacements, the last SICS replacement, 10 oscillograph replacements, SCADA replacement at 4 terminals, and radio replacements at 12 sites.
	$72,983	$67,200	$64,700
All Other	This includes preliminary engineering, major new buildings not associated with the	Continue activities as described in FY 1994.	Continue activities as described in FY 1995.

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III. Activity Descriptions: Transmission Services - Capital (continued)

All Other (continued)	transmission system itself, stock material purchases, and expense-to-capital transfers. No major buildings or other additions are planned.		In FY 1996, the first phase of a new building for the laboratories is planned. No other major buildings or other additions are planned.
	$14,401	$3,900	$23,300
Transmission System - Capital	$192,043	$199,600	$223,100

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Associated Project Costs - Capital

This program provides direct funding for additions, improvements, and replacements of the existing U.S. Bureau of Reclamation and Corps of Engineers hydroelectric projects in the Pacific Northwest. In addition to generating electricity, these projects serve many purposes including flood control, navigation, irrigation, recreation and water supply. The Bureau and Corps emphasizes efficient power production from existing facilities and improvement of the performance and availability of power units. BPA is improving its oversight and coordination function and is currently working with the Bureau and Corps to identify opportunities which increase system reliability and output. A Memorandum of Agreement between BPA and the Bureau has been signed by both parties. A Memorandum of Agreement with the Corps of Engineers (Corps) was signed in December 1994 and will be implemented in FY 1995.

A provision clarifying the authority for direct BPA funding of U.S. Corps of Engineers and U.S. Bureau of Reclamation O&M and capital activities was included in the National Energy Strategy Act (NES) passed by Congress in October 1992.

II. A. Summary Table: Associated Project Costs - Capital

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Corps of Engineers Capital	$ 0	$ 300	$ 1,200	+300%
Bureau of Reclamation Capital	22,150	23,100	19,800	+14%
Allowance for Funds Used During Construction	0	2,700	4,300	+59%
TOTAL Associated Project Costs - Capital	$ 22,150	$ 26,100	$ 25,300	-3%

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III. Activity Descriptions: Associated Project Costs - Capital

Program Activity	FY 1994	FY 1995	FY 1996
Corps of Engineers		Begin direct funding of work on one Corps of Engineers project, rewind of the Dalles Unit 9 $300	Continue direct funding of work at Bonneville. $1,200
Bureau of Reclamation	Begin direct funding of work on two Bureau of Reclamation projects, a major rehabilitation at the Minidoka Project and beginning of stator rewinds at three generators at Grand Coulee. $22,150	Continue direct funding of work at Minidoka and Grand Coulee. Begin direct funding of work at two additional Bureau of Reclamation projects, the replacement of 115-kV transformers at the Hungry Horse project and a major overhaul of the generators at the Boise, Idaho, diversion project. $23,100	Continue direct funding of work at Minidoka and Grand Coulee, and Hungry Horse. Begin direct funding of work at the Boise Diversion Project, a major rebuild of the generators. $19,800
Allowance for Funds Used During Construction		Allowance for Funds Used During Construction (AFUDC) represents BPA's estimated capitalized interest cost on borrowings for construction work-in-progress. $2,700	Allowance for Funds Used During Construction (AFUDC) represents BPA's capitalized interest cost on borrowings for construction work-in-progress. $4,300
Associated Project Costs - Capital	$22,150	$26,100	$25,300

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Environment/Fish & Wildlife - Capital

Provides for resource protection, enhancement, and mitigation of Columbia River Basin fish and wildlife losses attributed to the development and operation of Federal hydroelectric projects on the Columbia River and its tributaries pursuant to Section 4(h) of the Pacific Northwest Power Act. BPA discharges a major portion of its fish and wildlife responsibilities by funding projects designed to carry out the Northwest Power Planning Council's (Council) Fish and Wildlife Program. The FY 1995 program reflects BPA's continued commitment to: 1) its responsibilities under the Pacific Northwest Power Act, 2) supporting the Council's Fish and Wildlife Program, and 3) carrying out its responsibilities under the Endangered Species Act relative to recently listed Snake River salmon and Kootenai River white sturgeon stocks. The FY 1996 program will fund continuation of projects begun in FY 1994 or before with decreases in fish and wildlife funding. NEPA and environment issues may defer hatchery construction to FY 1996 and beyond.

II. A. Summary Table: Environment/Fish & Wildlife - Capital

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Anadromous Fish	$ 18,574	$ 19,200	$ 14,700	-23%
Wildlife Program	11,768	2,500	- -	- -
Preengineering Design	1,027	1,300	2,400	85%
Pollution Control & Abatement	3,191	17,700	15,000	-15%
TOTAL Environment/Fish & Wildlife - Capital	$ 34,560	$ 40,700	$ 32,100	-21%

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III. Activity Descriptions: Environment/Fish & Wildlife - Capital

Program Activity	FY 1994	FY 1995	FY 1996
Anadromous Fish	Continue construction on Yakima Basin Screen Facilities Phase II and Umatilla River hatchery. Continue predesign work on the Nez Perce and Yakima hatcheries and the Bonneville fish sampling facility. Construct habitat improvement passage and projects and small irrigation screening projects.	Continue construction on Yakima and Umatilla River hatcheries, the Yakima Screens Facilities Phase II, continue predesign work on the Nez Perce Hatchery and initiate construction on Bonneville Dam Fish Sampling Facility. Construct habitat improvement passage and projects and small irrigation screening projects.	Continue construction on Umatilla River hatchery, the Yakima Screens Facilities Phase II, and the Bonneville Dam Fish Sampling Facility. Continue predesign work on Northeast Oregon hatchery. Construct habitat improvement passage and projects and small irrigation screening projects.
	$18,574	$19,200	$14,700
Wildlife Program	The wildlife program trust activity includes trust agreements established with the states in the Columbia Basin region. The trusts are designed to remedy the hydropower portion of the damage to areas adjacent to the rivers when hydroelectric facilities were constructed. These trust arrangements should indemnify BPA from further fiscal exposure from this damage.	The wildlife program trust activity includes trust agreements established with the states in the Columbia Basin region. The trusts are designed to remedy the hydropower portion of the damage to areas adjacent to the rivers constructed. These trust arrangements should indemnify BPA from further fiscal exposure from this damage. Increases due to funding the Dworshak Wildlife Trust in Idaho during 1994. These trusts end this year.	
	$11,768	$2,500	
Preengineering Design	Fund early predesign work on future projects and fund ongoing engineering analysis as required/necessary.	Fund predesign work on future projects and fund ongoing engineering analysis as required/necessary.	Fund early predesign work on future projects and fund ongoing engineering analysis as required/necessary.
	$1,027	$1,300	$2,400

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III. Activity Descriptions: Environment/Fish & Wildlife - Capital (continued)

Pollution Control & Abatement	Reflects beginning of shift of Pollution Control & Abatement activities from Transmission Services capital program ta Environment/Fish & Wildlife capital program.	Work in progress includes seven 500-kV transformer replacements; acquisition of four spare transformers; 500-kV breaker replacements at Lower Monumental, John Day, Little Goose, Paul and additional breakers at Raver; 69 lower voltage breaker replacements; and contaminated capacitor removal at Bell, Bakeoven, Troutdale, Conkelley, Tillamook and Albany.	Continue funding for Pollution Control & Abatement activities as described in FY 1995.
	$3,191	$17,700	$15,000
Environment/Fish & Wildlife	$34,560	$40,700	$32,100

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Capital Equipment

Provides for acquisition of general and dedicated special purpose capital ADP equipment, development of capitalized ADP software, and acquisition of special-use capital furniture and equipment in support of all BPA programs. Over this budget period the program reflects the decision to enhance local area network (LAN) and wide area network (WAN) technology BPA-wide.

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Capital Equipment	$12,876	$13,400	$13,300	-1%
TOTAL Capital Equipment	$12,876	$13,400	$13,300	-1%

III. Activity Descriptions: Capital Equipment

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Continue upgrades and acquire and enhance central and supported system peripherals and equipment. Expansion of WAN/LAN network. Continue development of approved MISs. Acquire printing, audio-visual and duplicating equipment, furniture, etc.	Continue activities as described in FY 1994. Complete WAN/LAN network expansion	Continue activities as described in FY 1995.
Capital Equipment	$12,876	$13,400	$13,300

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Capitalized Bond Premium

Bonneville Power Administration incurs a bond premium whenever it repays or refinances a bond before the due date. When bonds are refinanced, the bond premiums incurred are capitalized. Historically, BPA generally has chosen to finance capitalized bond premiums with bonds issued to the U.S. Treasury, as was envisioned in the Federal Columbia River Transmission System Act of 1974.

II. A. Summary Table: Capitalized Bond Premium

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Capitalized Bond Premium	$ 15,579	$ 14,600	--	--
TOTAL Capitalized Bond Premium	$ 15,579	$ 14,600	--	--

III. Activity Descriptions: Capitalized Bond Premium

Program Activity	FY 1994	FY 1995	FY 1996
Capitalized Bond Premium	BPA incurs a bond premium when it retires a bond before its due date. Bond premiums incurred when refinancing a bond are capitalized. BPA refinanced high interest bonds in FY 1994. The capitalized bond premium was $15.6 million.	BPA has no plans to refinance bonds in FY 1995, but provides funding for possible refinances in FY 1995. If interest rates decline in FY 1995 to a point where additional bond refinancings are cost-effective, capitalized bond premiums could be incurred. The budget estimate is $14.6 million	Currently, BPA has no plans to refinance any bonds in FY 1996. However, if interest rates decline in FY 1996 to a point where additional bond refinancings are cost-effective, then capitalized bond premiums could be incurred.
	$15,579	$14,600	
Capitalized Bond Premium	$15,579	$14,600	--

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Residential Exchange - Operating Expense

The Pacific Northwest Power Act created the residential exchange program to extend the benefits of low-cost Federal Power to the residential and small farm customers of investor-owned and publicly owned utilities. Although it appears to be primarily a power transaction and is so treated in BPA's rate proceedings, the residential exchange is not a power transaction in the conventional sense. In effect, the program acts to lower the rates paid by the residential and small farm customers of exchanging utilities. No power is transferred to or from BPA. The gross cost of the exchange is partially offset by exchange revenues from participating utilities.

The Residential Exchange consists of the Residential Purchase and Sale Agreement (RPSA) and the Exchange Transmission Credit Agreement (ETCA). For the RPSA, the paper transaction operates as follows: BPA acquires certain amounts of power offered for sale by participating Pacific Northwest electric utilities. That power is acquired at each utility's "average system cost" which includes both generation and transmission costs. In exchange, BPA must sell an equivalent amount of electric power to the participating utilities for resale to the utilities' residential and small farm customers in the region. The power is sold at BPA's Priority Firm (PF) Rate, which is generally lower than the utilities' ASC. Since the same amount of power is involved, the "sale" of power is an accounting procedure used to determine the amount of benefit to be received by customers of exchanging utilities. In practice, only dollars are exchanged. Purchases at utilities' average system cost are shown below as "Gross Cost"; sales to utilities at the PF rate as "Revenue from Residential Exchange"; the difference, net expense (or Operating Expense) is the amount that is passed through to qualifying ratepayers.

The ETCA, a much smaller element of the residential exchange gross cost, is available to BPA's public utility and cooperative customers and limits their benefit payments to the cost of their transmission facilities. The payments, however, cannot be greater than the amount that the utility would have received if it had participated in the RPSA.

Changes from year to year in exchange costs are due to combinations of factors, including increases in utilities' ASC, load growth, the number of utilities participating in the program, and the level of BPA's own rates.

II. A. Summary Table: Residential Exchange - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Residential Exchange - Gross Cost	$ 962,482	$ 972,200	$ 1,011,800	+4%
Revenue from Residential Exchange	-802,700	-767,800	-808,000	-5%
TOTAL Residential Exchange - Operating Expense	$ 159,782	$ 204,400	$ 203,800	-1%

III. Activity Descriptions: Residential Exchange - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
Residential Exchange - Gross Cost	Exchange 3,351 average megawatts of energy with 20 utilities in the region as mandated in the Pacific Northwest Power Act in order to extend the benefits of low-cost Federal power to residential and small farm customers.	Exchange 3,271 average megawatts of energy with 20 utilities in the region as mandated in the Pacific Northwest Power Act in order to extend the benefits of low-cost Federal power to residential and small farm customers.	Exchange 3,299 average megawatts of energy with 20 utilities in the region as mandated in the Pacific Northwest Power Act in order to extend the benefits of low-cost Federal power to residential and small farm customers.
	$962,482	$972,200	$1,011,800
Revenue from Residential Exchange	Proceeds from selling 3,351 average megawatts of energy to 20 utilities in the region. These revenues partially offset the gross cost of the residential exchange. The net cost reveals the real benefit to residential and small farm customers of participating utilities.	Proceeds from selling 3,271 average megawatts of energy to 20 utilities in the region. These revenues partially offset the gross cost of the residential exchange. The net cost reveals the real benefit to residential and small farm customers of participating utilities.	Proceeds from selling 3,299 average megawatts of energy to 20 utilities in the region. These revenues partially offset the gross cost of the residential exchange. The net cost reveals the real benefit to residential and small farm customers of participating utilities.
	-$802,700	-$767,800	-$808,000
Residential Exchange - Operating Expense	$159,782	$204,400	$203,800

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Marketing, Conservation & Production - Operating Expense

Marketing, Conservation & Production includes all BPA strategic resource planning and business development, short and long-term power purchases/wheeling, electric utility marketing of resources, conservation and energy services, and generation and oversight costs, including the large thermal nuclear projects of Trojan, WNP-2, WNP-1, Hanford and WNP-3. The Marketing, Conservation and Production group identifies the Administrator's load obligations, plans and develops products and services to meet the needs of BPA customers, and acquires resources as needed. The Pacific Northwest Electric Power Planning and Conservation Act of 1980 requires BPA to treat conservation as the region's highest priority resource in planning to meet the Administrator's load-serving obligations.

The electric utility industry is changing dramatically. To stay competitive, Bonneville is committed to offering business lines which focus on the full range of customer needs. Conservation Reinvention seeks to put conservation on a more competitive ground. The goal is to continue on the path toward acquiring all cost-effective conservation in Bonneville's service area, while creating a Demand Side Management (DSM) business line which is fully self-supporting in conjunction with establishing a foundation for an energy services relationship with our customers.

In formulating the FY 1996 Marketing, Conservation and Production expense funding levels, BPA examined program levels in the context of changes in loads and resources, changes in program activities, the resource deficit, supply obligations, and the emphasis placed on acquiring all cost-effective resources as called for by the Northwest Power Planning Council's (Council) 1991 Northwest Conservation and Electric Power Plan (Power Plan).

Sixty-five percent of the FY 1996 expense funding for this program is essentially fixed. It consists of generating plants' debt service of $518.4 million, generating plants operations, maintenance, and preservation costs of $283.6 million (including investor-owned utility [IOU] settlement costs for WNP-3), and the contractually committed costs for Eugene Water & Electric Board (EWEB) residential weatherization of $1.9 million and Aluminum Smelters Conservation/Modernization of $6.4 million. The remainder of the program is subject to direct BPA control and has been constrained to minimize adverse effects on wholesale power rates while still meeting essential program requirements.

Remaining budget requirements for this program are found in the capital program's Key Activity Summary for Marketing, Conservation and Production.

II. A. Summary Table: Marketing, Conservation & Production

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Short-Term Power Purchases/PNCA Interchange	$ 217,072	$ 166,600	$ 165,800	- -
Long-Term Power Purchases/Wheeling	17,940	24,200	66,200	174%
Power Scheduling/Marketing	78,770	96,100	99,500	4%
Conservation	60,457	58,400	73,500	26%
Generation & Oversight	17,563	23,500	20,700	-12%
Trojan	22,299	27,600	23,200	-16%
WNP-2	389,270	418,900	449,300	7%
WNP-1/Hanford and WNP-3	313,216	338,100	322,800	-5%
TOTAL Marketing, Conservation & Production - Operating Expense	$ 1,116,587	$ 1,153,400	$ 1,221,000	6%

III. Activity Descriptions: Marketing, Conservation & Production - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
Short-Term Power Purchases, PNCA Interchange	Purchase power for resale, fish mitigation or for the efficient operation of the power system. Under terms of the Pacific Northwest Coordination Agreement (PNCA), make payments to other generating utilities for power received as interchange energy. Interchange energy is energy transferred between utilities either to supply all or a part of any deficiency between a utility's actual energy capability and its firm energy load carrying capability or to return such energy to the supplying utility. FY 1994 is a below average water year. As a result, BPA power purchases are higher than in a normal water year.	Continue activities in FY 1995 as described for FY 1994. This forecast reflects the assumptions of minimum fish measures and a normal water year for FY 1995.	Continue activities in FY 1996 as described in FY 1995.
	$217,072	$166,600	$165,800

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Long-Term Power Purchases/Wheeling	Acquire 100 percent of the Idaho Falls and Cowlitz Falls hydroelectric project output. Continue contract payments to acquire the power from two demonstration geothermal sites in the region. Continue acquisition of power from existing billing credit projects. Sign a contract to acquire 240 aMW from the Tenaska Project.	Continue acquisition of power from existing billing credit projects. Make option payments on contingency resource projects. Sign contracts with the Wyoming Wind Project and CARES Wind Project. Pay preconstruction and investigation expenses for competitive acquisitions, if required. Acquire a total of 14 aMW's. Spending increases due to Klickitat (SDS) competitive acquisition project forecast.	Pay preconstruction and investigation expenses for competitive acquisitions, if required. Spending increases due to Tenaska, Klickitat (SDS) and Wauna competitive acquisition project forecasts.
	$17,940	$24,200	$66,200
Power Scheduling/ Marketing	Schedule and market electric energy to BPA customers and Pacific Northwest's interconnected utilities. Place major emphasis on scheduling and supporting implementation of intertie access policy and streamflow coordination with the water budget of the Fish and Wildlife Program.	Schedule and market electric energy to BPA customers and Pacific Northwest's interconnected utilities. Major emphasis placed on scheduling and supporting implementation of intertie access policy and streamflow coordination with the water budget of the Fish and Wildlife Program. The increases are due to corporate overhead costs of sales and customer services added as an indirect to this program.	Schedule and market electric energy to BPA customers and Pacific Northwest's interconnected utilities. Major emphasis placed on scheduling and supporting implementation of intertie access policy and streamflow coordination with the water budget of the Fish and Wildlife Program. The increases are due to corporate overhead costs of sales and customer services added as an indirect to this program.
	$78,770	$96,100	$99,500
Conservation	Acquire conservation resources through competitive acquisition, billing credits and multi-sector mechanisms. Reimburse Eugene Water Electric Board (EWEB) for residential weatherization. Financial assistance to local	Continue previously contracted conservation activities as described in FY 1994 with development and increase in Demand Side Management (DSM) business line activities which are fully self-supporting by FY 1996.	Continue activities as described in FY 1995. Expand Demand Side Management (DSM) business line activities.

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Conservation (continued)	governments, Indian tribes, and utilities for technical assistance, utility and builder training, and enforcement of Model Conservation Standards (MCS). Continue Super Good Cents marketing program. Continue the State Technical Assistance Program to encourage efficient use of electrical energy and renewable resources.			
	$60,457	$58,400	$73,500	
Generation & Oversight	Provide oversight of Idaho Falls and Cowlitz Falls hydroelectric projects. Complete evaluations, begin negotiations and complete contract offers (contingent upon successful completion of the NEPA process and 6(c) process) for competitive acquisitions. Put out Resource Contingency Program (RCP) solicitation. Begin negotiations and evaluations on RCP projects. Provide engineering support and continue generating resources RD&D efforts in areas such as geothermal and hydropower. Conduct demonstrations and institute programs to develop the most promising hydrosystem efficiency improvements. Provide oversight for billing credit projects. Provide support for implementation of Columbia River Treaty. Develop coordinated operation of the Pacific Northwest and Canadian Power Systems, investigate and analyze Canadian proposals for power export, analyze intertie needs	Provide oversight of all contracts signed to date in addition to the Tenaska, CARES and the Wyoming Wind Projects. Finish the NEPA process for the RCP Projects and the CARES Wind Project, and start the NEPA process for the Glass Mountain Project. Create a new 6(c) process for the RCP Projects. Provide support for implementation of Columbia River Treaty. Developed coordinated operation of the Pacific Northwest and Canadian Power Systems, investigate and analyze Canadian proposals for power export, analyze intertie needs and the economics of proposed intertie expansions. Provide oversight of large thermal generating plants from which BPA purchases capability to insure that all BPA approval rights are protected; coordinate, communicate and administer agreements, issues and programs between BPA and the project owners.	Provide oversight of all contracts signed to date in addition to completing the NEPA process for the Glass Mountain Project. Provide support for implementation of Columbia River Treaty. Developed coordinated operation of the Pacific Northwest and Canadian Power Systems, investigate and analyze Canadian proposals for power export, analyze intertie needs and the economics of proposed intertie expansions. Provide oversight of large thermal generating plants from which BPA purchases capability to insure that all BPA approval rights are protected; coordinate, communicate and administer agreements, issues and programs between BPA and the project owners. Provide litigation and legal services covering existing and prospective financing arrangements involving the nuclear generating projects; Columbia River Treaty, non-Treaty	

Generation & Oversight (continued)	and the economics of proposed intertie expansions. Provide oversight of large thermal generating plants from which BPA purchases capability to insure that all BPA approval rights are protected; coordinate, communicate and administer agreements, issues and programs between BPA and the project owners. Provide litigation and legal services covering existing and prospective financing arrangements involving the nuclear generating projects; Columbia River Treaty, non-Treaty and related resources issues; conservation and other resources acquired by BPA; research relating to bankruptcy and tax issues, involving entities with whom BPA has an existing contractual relationship; and a major contract with the Department of Justice for the WNP-1 and WNP-3 cost sharing litigation.	Provide litigation and legal services covering existing and prospective financing arrangements involving the nuclear generating projects; Columbia River Treaty, non-Treaty and related resources issues; conservation and other resources acquired by BPA; and research relating to bankruptcy and tax issues, involving entities with whom BPA has an existing contractual relationship. Includes major contract with the Department of Justice for the WNP-1 and WNP-3 cost sharing litigation.	and related resources issues; conservation and other resources acquired by BPA; and research relating to bankruptcy and tax issues, involving entities with whom BPA has an existing contractual relationship. Includes major contract with the Department of Justice for the WNP-1 and WNP-3 cost sharing litigation.
	$17,563	$23,500	$20,700
Trojan	Continue termination of Trojan Nuclear Plant.	Continue termination of Trojan Nuclear Plant.	Continue termination of Trojan Nuclear Plant.
	$22,299	$27,600	$23,200
WNP-2	Continue to acquire full capability of WNP-2. Forecast reflects end of up-front savings from advance bond refunding.	Continue to acquire full capability of WNP-2.	Continue to acquire full capability of WNP-2.
	$389,270	$418,900	$449,300

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III. Activity Descriptions: Marketing, Conservation & Production - Operating Expense (continued)

WNP-1/Hanford and WNP-3	Continue to fulfill contractual obligations for WNP-1, Hanford and WNP-3. Forecast reflects end of up-front savings from advance bond refunding.	Continue to fulfill contractual obligations for the terminated projects.	Continue to fulfill contractual obligations for the terminated projects.
	$313,216	$338,100	$322,800
Marketing, Conservation & Production - Operating Expense	$1,116,587	$1,153,400	$1,221,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Transmission Services - Operating Expense

Provides for the transmission system services of engineering, operations and maintenance for BPA's electric transmission system of 14,800 circuit miles (23,800 circuit kilometers) of lines, 400 substations, and associated power system, control and communication, and general plant facilities with an invested cost of more than $4.8 billion. For the budget period, Transmission Services will carry out primary strategies of: (1) Maintaining the safety and reliability of the transmission system by safely performing transmission system functions to protect the public and BPA employees and by maintaining and/or improving performance of the transmission system; (2) increasing the focus on customers by using performance indicators, developing knowledge of customers' unique characteristics and needs, enhancing coordination of outages and work plans with customers, and improving customer service processes; (3) optimizing the transmission system by enhancing the capabilities and value of the system, reducing transmission bottlenecks, and increasing the availability of intra- and inter-regional interties.; and (4) improving BPA's competitive position by balancing system requirements with risk and cost assessments and developing new revenue-producing transmission products and services.

Engineering provides for in-house power transmission research and development (R&D) activities and support activities such as planning, budgeting, and project scheduling for transmission system development. In-house R&D primarily develops applications for specific needs of the BPA power system and focuses on improved, reduced-cost alternatives for meeting power transmission and analysis needs, particularly interties; extending the useful life and capacity of existing transmission facilities; increasing the effectiveness of BPA's system operations and maintenance; assuring safety and reliability of the power system; investigating impacts of programs, technologies and facilities to assure environmental compatibility; and, investigating emerging technologies to determine possible application to the BPA system.

Power system operations provides for operation and control of the BPA transmission system to ensure safe, reliable, efficient and cost-effective service to the Pacific Northwest region's customers and to interconnected transmission systems. Three main functions of substation operations, power system control and dispatch, and operations standards and engineering implement long-term strategies keyed to high system reliability included in BPA's Transmission Services strategic action plan.

System maintenance provides for the preventive and corrective maintenance of BPA's electric power transmission system including high-voltage transmission lines, substations and related equipment, control system, BPA-owned or leased real property, and non-electric plant facilities. BPA is conducting a long-range "catch-up" program to reduce a large, long-standing maintenance backlog and increase the effectiveness of preventive maintenance efforts.

This program also covers costs of accounting adjustments to expense costs incurred as capital investments when analysis of outstanding capital work orders determines these costs should be expensed.

Capital investments for Transmission Services are found in the Capital Programs section of the budget presentation. The capital and expense budgets for Transmission Services must be combined for a complete budgetary consideration of Transmission Services.

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II. A. Summary Table: Transmission Services - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Engineering	$ 24,764	$ 24,200	$ 21,900	-9%
Operations	36,436	41,700	41,500	--
Maintenance	98,897	98,900	94,700	-4%
TOTAL Transmission Services - Operating Expense	$ 160,097	$ 164,800	$ 158,100	-4%

III. Activity Descriptions: Transmission Services - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
Engineering	R&D, Program Support, and Capital to Expense Adjustment: Conduct in-house transmission system research and development, including studies on electro-magnetic fields and HVDC outage reduction, methods to uprate existing facilities and reduce maintenance costs and investigation of artificial intelligence/ expert systems. Provide general program support activities, such as planning, budgeting, scheduling, etc. Annually, BPA analyzes its outstanding capital work orders to assess whether they should be expensed. This year, approximately $1.1 million of work orders are expensed.	R&D, Program Support, and Capital to Expense Adjustment Continue activities as described in FY 1994. Approximately $3 million of work orders are estimated to be expensed.	R&D, Program Support, and Capital to Expense Adjustment Continue activities as described in FY 1995. Approximately $3 million of work orders are estimated to be expensed.
	$24,764	$24,200	$21,900
Operations	Substation Operations: Perform operation functions necessary to provide electric service to customers and to protect the Government's investment in electric equipment. Includes equipment adjustments, switching	Substation Operations: The FY 1995 activities continue as stated for FY 1994. The increased funding is due to development of system operations training program and higher employee relocation costs.	Substation Operations: The FY 1996 activities continue as stated for FY 1995.

Operations (continued)	lines and equipment during emergencies or maintenance, isolating damaged equipment, restoring service to customers, and inspecting equipment, reading meters, etc.		
	Power System Control & Dispatching: Includes central dispatching, control, and monitoring of the electric operation of the Federal transmission system. Also includes load, frequency, and voltage control of Federal generating plants; and operation of the system control and data computers at Dittmer and Eastern Control Centers.	Power System Control & Dispatching: The FY 1995 activities continue as in FY 1994. Increased funding is due to increased contracting for the new dispatcher training facility and for shift of approximately $1.4 million per year from the maintenance program for maintenance of Control Center computers.	Power System Control & Dispatching: The FY 1996 activities continue as in FY 1995.
	Operations Standards & Engineering: Includes analyzing system loads, voltage levels, outage information, stability levels and other data, and making policy recommendations for system operations and related affairs. Provides for development of control center requirements for centralized automation of substations and generation and BPA participation with other utilities in developing utility operating standards and guides	Operations Standards & Engineering: The FY 1995 activities continue as stated for FY 1994. Increased funding is due to increased contracting for system studies and system operations data requirements.	Operations Standards & Engineering: The FY 1996 activities continue as stated for FY 1995.
	$36,436	$41,700	$41,500
Maintenance	Transmission Line Maintenance: Maintain and repair nearly 24,135 km (15,00 circuit miles) of high voltage transmission lines, of which over 6,436 km (4,000 circuit miles) are 500-kV transmission (EHV)	Transmission Line Maintenance: Continue activities as described in FY 1994.	Transmission Line Maintenance. The FY 1996 activities continue as stated for FY 1995.

Maintenance (continued)	which is two and one-half times more labor intensive than lower transmission voltages, although more efficient in transmission of power.		
	Substation Maintenance: Provides for service and repair of the transmission system power equipment located at approximately 400 substations and other related facilities. Activities involve more than 25,000 pieces of equipment, occur at more than 400 work sites annually, and consume more than 220 FTE.	Substation Maintenance: Continue activities as described in FY 1994.	Substation Maintenance: Continue activities as described in FY 1995.
	System Protection Maintenance: Provides for the preventive and corrective maintenance of relaying and metering equipment used to control and protect the electrical transmission system and to meter energy transfers for the purpose of revenue billing. Additionally, field engineering services provide technical advice and assure the correct operation of power system relaying and special control systems used to support inter-regional energy transmission capabilities.	System Protection Maintenance: Continue activities as described in FY 1994.	System Protection Maintenance: Continue activities as described in FY 1995.
	Power System Control Maintenance: Provides for the testing, repair, and field engineering support (in both the corrective and preventive modes) of BPA's highly complex equipment, communications and control systems, including seven major microwave systems and other critical communications and control systems that support the power system.	Power System Control Maintenance: Continue activities as described in FY 1994.	Power System Control Maintenance: Continue activities as described in FY 1995.

III. Activity Descriptions: Transmission Services - Operating Expense (continued)

Maintenance (continued)	Nonelectric Plant Maintenance: Provides for the preventive and corrective maintenance of BPA's nonelectric facilities. Includes site; building and building utility maintenance; custodial services; station utility; transportation maintenance; and other maintenance service activities on BPA-owned or leased nonelectric facilities	Nonelectric Plant Maintenance: Continue activities as described in FY 1994.	Nonelectric Plant Maintenance. The activities continue as stated in FY 1995.
	Maintenance Standards & Engineering. Provides for establishing, monitoring, and updating system maintenance standards, policies, and procedures; and review and update of long-range plans for maintenance of the electric power transmission system emphasizing increased productivity and preventive maintenance.	Maintenance Standards & Engineering: Continue activities as described in FY 1994.	Maintenance Standards & Engineering : The activities remain the same as stated in FY 1995
	$98,897	$98,900	$94,700
Transmission Services - Operating Expense	$160,097	$164,800	$158,100

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Environment/Fish and Wildlife - Operating Expense

Provides for protection, enhancement, and mitigation of Columbia River Basin fish and wildlife losses attributed to the development and operation of hydroelectric projects on the Columbia River and its tributaries pursuant to Section 4(h) of the Pacific Northwest Power Act. BPA discharges a major portion of its fish and wildlife responsibilities, and reduces the Administrator's obligation, by funding projects and activities designed to carry out the intent of the Northwest Power Planning Council's Fish and Wildlife Program. BPA's fish and wildlife expense funds are directed at activities that increase numbers of Columbia River Basin fish and wildlife resources. These include projects designed to improve juvenile fish passage at mainstream dams, resource studies and evaluation, facility planning, and facility operation and maintenance. Funding priority is afforded salmon and steelhead runs, particularly wild/natural stocks originating above Bonneville Dam. Four stocks have been listed under the Endangered Species Act as threatened or endangered.

Pollution Control & Abatement provides a full range of environmental and pollution abatement actions on the power system, including but not limited to : prevention/remedial actions, monitoring, certification training, and waste management to support and sustain prudent maintenance of facilities in compliance with environmental protection and pollution control statutes.

Remaining budget requirements for this program are found in the capital program's Key Activity Summary for Environment/Fish and Wildlife.

II. A. Summary Table: Environment/Fish and Wildlife - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Anadromous Fish	$ 39,759	$ 44,600	$ 39,900	-11%
Resident Fish	6,084	6,800	8,500	25%
Wildlife	6,105	6,300	16,400	160%
Fish & Wildlife Operations and Maintenance	4,688	6,600	5,300	-20%
Pollution Control & Abatement	6,254	8,500	9,800	15%
TOTAL Environment/Fish and Wildlife - Operating Expense	$ 62,891	$ 72,800	$ 79,900	+10%

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III. Activity Descriptions: Environment/Fish and Wildlife - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
Anadromous Fish	Continue Pacific Northwest Power Act responsibilities and Council Fish and Wildlife program funding based on measures installed in FY 1992 and before. Continue development of downstream migration, and disease and artificial production improvements methods.	Continue Pacific Northwest Power Act responsibilities and Council Fish and Wildlife program funding based on measures installed in FY 1992 and before. Increase over FY 1994 reflects implementation activities associated with proposed listings under the Endangered Species Act (ESA). Continue development of downstream migration, and disease and artificial production improvements methods.	Continue Pacific Northwest Power Act responsibilities and Council Fish and Wildlife program funding based on measures installed in FY 1992 and before. Continue development of downstream migration, and disease and artificial production improvements methods.
	$39,759	$44,600	$39,900
Resident Fish	Continue ongoing studies of reservoir operation effects on fish. Continue in-stream flow studies and white sturgeon habitat requirements. Initiate activities associated with proposed listings under the Endangered Species Act.	Continue efforts conducted in FY 1994 and prior years. Continue activities associated with proposed listings under the Endangered Species Act.	Continue efforts conducted in FY 1994 and prior years. Continue activities associated with proposed listings under the Endangered Species Act.
	$6,084	$6,800	$8,500
Wildlife	Continue wildlife loss assessments and further development of wildlife mitigation plans and initiate wildlife mitigation actions. Initiate actions resulting from Council's amendments to the Fish and Wildlife Program for wildlife enhancement.	Continue the FY 1994 program including funding for wildlife actions resulting from Council Fish and Wildlife program amendments in 1990 for wildlife mitigation.	Continue the FY 1994 program including funding for wildlife actions resulting from Council Fish and Wildlife Program amendments in 1990 for wildlife mitigation. Major increase in funding due to the Washington Wildlife Coalition per the Washington Wildlife Interim Agreement.
	$6,105	$6,300	$16,400

Fish & Wildlife Operations and Maintenance	Funding reflects operation and maintenance of completed fish capital projects funded by BPA.	Reflects schedule of completed projects entering the O&M phase in implementation.	Reflects schedule of completed projects entering the O&M phase in implementation.
	$4,688	$6,600	$5,300
Pollution Control/ Abatement	The environmental activity provides for a full range of environmental and pollution abatement planning and management actions of the Bonneville power system. The scope includes: 1) program evaluation and development, 2) environmental planning and review, 3) environmental inventory and investigation, 4) prevention/remedial actions, 5) certification training, 6) monitoring, and 7) waste management/minimization guidance. The purpose of the activity is to support and sustain prudent facility maintenance and to accommodate compliance with environmental protection and pollution control statutes. These activities are performed on an ongoing basis and are likely to include occasional pollution incident response activities on the power system.	The activities remain the same as FY 1994. Account growth includes funds for anticipated clean up projects.	The activities remain the same as FY 1994 and FY 1995.
	$6,254	$8,500	$9,800
Environment/Fish & Wildlife - Operating Expense	$62,891	$72,800	$79,900

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Associated Project Costs - Operating Expense

This program provides funding for power related costs and liabilities of the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation hydroelectric projects in the Pacific Northwest which serve many purposes, including flood control, navigation, irrigation, recreation and water supply. The projects supply about 87 percent of BPA's firm energy needs. Both agencies are emphasizing efficient power production from existing facilities and improvement of the performance and availability of power units. BPA is improving its oversight function and is currently working with both agencies to identify opportunities to reduce costs. BPA repays additional financing costs of FCRPS facilities through its Interest Expense and Capital Transfer budget programs. Pursuant to the Lower Snake River Compensation Plan (LSRCP), BPA is also responsible for the actual operations and maintenance (O&M) expenditures incurred as part of the LSRCP, and repays the Treasury accordingly.

As a result of new legislation, Bonneville will be responsible for making payment to the Confederated Colville Tribes in settlement of a long-standing lawsuit. The Tribes have been seeking a portion of Grand Coulee hydroelectric revenues to compensate them for land they lost as a result of the Federal Government's construction of the dam. The legislation calls for the Federal Government Judgment Fund to make a lump sum payment of $53 million to the Colvilles, and for Bonneville to make an initial annual payment of $15.25 million in FY 1996 and amounts thereafter which are tied to the actual generation of the dam and Bonneville's rates. The bill also calls for the U.S. Treasury to be responsible for 30 percent of the total amount paid to the Tribes. Therefore the bill calls for Treasury to give Bonneville credit for a portion of the amount of Bonneville's payment beginning in FY 2000. The amount shown here in FY 1996 represents the first of Bonneville's annual payments to the Tribes.

II. A. Summary Table: Associated Project Costs - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Bureau of Reclamation O&M	$ 33,960	$ 39,400	$ 38,500	-2%
Bureau of Reclamation Amortization	18,310	21,400	- -	- -
Corps of Engineers O&M	81,694	85,900	81,400	-5%
Lower Snake River Compensation Plan O&M	11,569	14,200	14,500	+2%
Colville Settlement	- -	- -	15,300	- -
TOTAL Associated Project Costs - Operating Expense	$ 145,533	$ 160,900	$ 149,700	-7%

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III. Activity Descriptions: Associated Project Costs - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
Bureau of Reclamation O&M	This item is for payments to the Reclamation Fund covering the costs of operation and maintenance of Bureau of Reclamation hydroelectric projects that are part of the FCRPS allocated to be repaid from BPA revenues.	Continue Bureau project cost support.	Continue Bureau project cost support.
	$33,960	$39,400	$38,500
Bureau of Reclamation Amortization	Amortization of high interest rate Bureau of Reclamation debt. No scheduled amortization.	Scheduled amortization of Bureau of Reclamation debt.	Scheduled amortization of Bureau of Reclamation debt. No scheduled amortization.
	$18,310	$21,400	
Corps of Engineers O&M	This item covers payments to the Treasury for the power share of the operation and maintenance costs of Corps of Engineers generating projects repayable from BPA revenues.	Continue Corps project cost support.	Continue Corps project cost support.
	$81,694	$85,900	$81,400
Lower Snake River Compensation Plan O&M	Includes payments to the Treasury for the operation and maintenance of Lower Snake River hatcheries pursuant to the LSRCP authorized by the Water Resources Development Act of 1976. In total, 23 hatchery facilities have been completed. LSRCP stipulates that 100 percent of the anadromous fish and 83.8 percent of resident fish mitigation costs be repaid to the Treasury from power sales. The Corps of Engineers is constructing the hatchery facilities through direct appropriations.		

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III. Activity Descriptions: Associated Project Costs - Operating Expense (continued)

Lower Snake River Compensation Plan O&M (continued)	The Fish and Wildlife Service manages the operation and maintenance of the facilities.	Continue LSRCP payments	Continue LSRCP payments
	$11,569	$14,200	$14,500
Colville Settlement			This represent the first annual payment by Bonneville to the Colville Tribes as a result of the Colville Settlement act.
			$15,300
Associated Project Costs - Operating Expense	$145,533	$160,900	$149,700

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Interest - Operating Expense

The Federal Columbia River Transmission System Act, as amended by the Pacific Northwest Power Act and replenished by Public Law 98-50, provided borrowing authority of $3.75 billion to assist in financing the construction, acquisition, and replacement of the transmission system and to implement the Administrator's authority pursuant to the Pacific Northwest Power Act, including his authority to provide financial assistance for conservation measures, renewable resources, and fish and wildlife. This item covers the payment of interest to the U.S. Treasury on those borrowings. Interest estimates are a direct function of capital investment program levels and estimates of new plant-in-service for the FCRPS.

II. A. Summary Table: Interest - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996	% Change
BPA Bond Interest (Net)	$ 149,284	$ 181,800	$ 170,100	-6%
BPA Appropriation Interest	55,275	55,400	51,300	-7%
Corps of Engineers Appropriation Interest	133,282	137,400	150,200	+9%
Bureau of Reclamation Appropriation Interest	31,831	33,000	30,800	-7%
TOTAL Interest - Operating Expense	$ 369,672	$ 407,600	$ 402,400	+1%

III. Activity Descriptions: Interest - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
BPA Bond Interest (Net)	Payment made to the U.S. Treasury of net interest due on outstanding bonds issued to finance construction, acquisition, and replacement of the transmission system, conservation measures, fish and wildlife projects, and capital equipment. The amounts paid is net of Allowance for Funds Used During Construction (AFUDC) and of interest income.	Continue payment to the U.S. Treasury of net interest due on outstanding bonds.	Continue payment to the U.S. Treasury of net interest due on outstanding bonds.
	$149,284	$181,800	$170,100

III. Activity Descriptions: Interest - Operating Expense (continued)

BPA Appropriation Interest	Interest payments on BPA appropriations debt incurred before self-financing.	Interest payments on BPA appropriations debt incurred before self-financing.	Interest payments on BPA appropriations debt incurred before self-financing.
	$55,275	$55,400	$51,300
Corps of Engineers Appropriation Interest	This item covers payment to the Treasury for interest due on appropriated funds used to finance Corps of Engineers power generation facilities of the FCRPS. Also includes payments to the Treasury for interest due on appropriated funds used to finance Corps of Engineers' construction of mitigation hatchery facilities on the Lower Snake River authorized by the Water Development Act of 1976.	Interest costs on continued appropriations.	Interest costs on continued appropriations.
	$133,282	$137,400	$150,200
Bureau of Reclamation Appropriation Interest	This item covers payments to the Reclamation Fund for the interest on the power share of capital replacements at Bureau of Reclamation hydroelectric projects which contique to be financed by annual appropriations.	Interest costs on continued appropriations	Interest costs on continued appropriations.
	$31,831	$33,000	$30,800
Interest - Operating Expense	$369,672	$407,600	$402,400

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Planning Council - Operating Expense

This budget program provides funding for operation of the Pacific Northwest Power and Conservation Planning Council (Council). The Council of PNW State members was established pursuant to the Pacific Northwest Power Act of 1980. Its major activities center around the periodic preparation of a northwest Conservation and Electric Power Plan (a 20-year electric energy demand and resource forecast and energy conservation program) and a Columbia River Basin Fish and Wildlife Program of loss mitigation and resource enhancement actions. The Council will revise implementation of its Power Plan and Fish and Wildlife Program as changing conditions require. Major revisions will be undertaken every 5 years if no significant changes cause a major revision in the interim. The Fish and Wildlife Program has been amended five times, with the first amendment process in FY 1991, and the most recent amendment in December 1994.

Funding for the Council is provided by BPA and is recovered through BPA rates. The Pacific Northwest Power Act directs that expenses of the Council (subject to certain limits based on forecasted BPA power sales) shall be included in BPA's annual budget submitted to Congress.

II. A. Summary Table: Planning Council - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Planning Council	$ 8,090	$ 8,500	$ 8,800	+4%
TOTAL Planning Council - Operating Expense	$ 8,090	$ 8,500	$ 8,800	+4%

III. Activity Descriptions: Planning Council - Operating Expense

Program Activity	FY 1994	FY 1995	FY 1996
Planning Council	Fund Planning Council activities.	Fund Planning Council activities.	Fund Planning Council activities.
	$8,090	$8,500	$8,800
Planning Council - Operating Expense	$8,090	$8,500	$8,800

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Reimbursable

BPA enters into written agreements with Federal and non-Federal entities that have work or services to be performed by BPA staff at the expense of the benefiting utilities. The projects must be beneficial, under the one-utility concept, to BPA operations and to the Federal or non-Federal entity involved. Additionally, these activities contribute to more efficient or reliable construction, operation and maintenance of the Federal transmission system or otherwise enhance electric service to the region. This program consists of commodities, work or services furnished by BPA to Federal and non-Federal entities for which funds are received and credited to the Bonneville Fund. The FERC Coordination Agreement payment is a reimbursable activity in which BPA serves as an agent for non-Federal hydro operators for the collection of funds due to the U.S. Treasury pursuant to Section 10(f) of the Federal Power Act and the Pacific Northwest Coordination Agreement.

II. A. Summary Table: Reimbursable

Program Activity	FY 1994	FY 1995	FY 1996	% Change
Short-Term Power Purchases	$ 27,375	$ 34,300	$ 34,700	+1%
Work Done for Others	52,337	46,800	48,000	+3%
Federal Energy Regulatory Commission (FERC) Coordination Agreement	3,318	3,600	3,600	--
TOTAL Reimbursable	$ 83,030	$ 84,700	$ 86,300	+2%

III. Activity Descriptions: Reimbursable

Program Activity	FY 1994	FY 1995	FY 1996
Short-Term Power Purchases	Reimbursable short-term power purchases for the Service and Exchange Agreement and the Industrial Replacement Energy (IRE) Agreement.	The activities remain the same as in FY 1994.	The activities remain the same as in FY 1995.
	$27,375	$34,300	$34,700
	Perform reimbursable work for others. This includes construction, operation and	The activities remain the same as in FY 1994 but at a reduced level of effort.	The activities remain the same as in FY 1995

III. Activity Descriptions: Reimbursable (continued)

Work Done for Others (continued)	maintenance of transmission system facilities and related utility and general support for customers and other entities.		
	$52,337	$46,800	$48,000
Federal Energy Regulatory Commission (FERC) Coordination Agreement	This item covers payments to the General Fund of the Treasury which the FERC determines are due the Federal Government pursuant to Section 10(f) of the Federal Power Act for downstream benefits realized at non-Federal hydroelectric projects as a result of storage releases from upstream Federal reservoirs. BPA will make payments on behalf of the non-Federal operators and in accordance with the Pacific Northwest Coordination Agreement. These Treasury payments offset a portion of the amount BPA owes for O&M expenses at the relevant Corps of Engineers and Bureau of Reclamation projects.	Continue FERC Coordination payments.	Continue FERC Coordination payments.
	$3,318	$3,600	$3,600
Reimbursable	$83,030	$84,700	$86,300

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Capital Transfers

Capital Transfers are funds conveyed to the U.S. Treasury for repayment of certain Federal Columbia River Power System (FCRPS) costs not included in the Associated Project Costs budget. Capital transfers are cash transactions and, as such, are not considered budget obligations.

II. A. Summary Table: Capital Transfers

Program Activity	FY 1994	FY 1995	FY 1996	% Change
BPA Bond Amortization	$ 55,873	$ 272,100	$ 200,800	-26%
Third AC- Non-Federal Participant Payment	- -	156,000	- -	- -
Corps Appropriation Amortization	116,162	74,100	- -	- -
TOTAL Capital Transfers	$ 172,035	$ 502,200	$ 200,800	-60%

III. Activity Descriptions: Capital Transfers

Program Activity	FY 1994	FY 1995	FY 1996
BPA Bond Amortization	This item covers repayments to the U.S. Treasury for Federal investment in transmission facilities since 1974. This item also covers repayment of bonds issued in support of conservation and fish and wildlife since the passage of the PNW Power Act in 1980.	This item covers repayment to the U.S. Treasury for Federal investment in transmission facilities since 1974. This item also covers repayment of bonds issued in support of conservation and fish and wildlife since the passage of the PNW Power Act in 1980.	This item covers repayment to the U.S. Treasury for Federal investment in transmission facilities since 1974. This item also covers repayment of bonds issued in support of conservation and fish and wildlife since the passage of the PNW Power Act in 1980.
	$55,873	$272,100	$200,800

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Third AC- Non-Federal Participant Payment		This represents an unscheduled amortization payment connected with funds received from the Non-Federal participants in the Third AC Intertie transmission line. This payment will be made in FY 1995 only if these funds are received in a timely manner. $156,000	
Corps Appropriation Amortization	This item covers repayments to the Treasury for unpaid appropriations on the power segment of Corps of Engineers projects in the Federal Columbia River Power System. $ 116,162	This item covers repayments to the Treasury for unpaid appropriations on the power segment of Corps of Engineers projects in the Federal Columbia River Power System. $24,100	
Capital Transfers	$172,035	$502,200	$200,800

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES

PROGRAM & FINANCING SUMMARY
(in thousands of dollars)

Identification Code: 89-4045-0-3-271

31-Jan-95

		1994 est.	1995 est.	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
	Program by activities:							
	Operating expenses:							
0.01	Residential Exchange	962,482	972,200	1,011,800	1,073,000	1,115,400	1,149,800	1,186,300
0.02	Marketing, Conservation & Production	1,116,587	1,153,400	1,221,000	1,247,500	1,289,500	1,401,000	1,423,400
0.03	Transmission Services	160,097	164,800	168,100	162,500	168,300	175,000	182,500
0.05	Planning Council	8,090	8,500	8,800	9,100	9,500	9,800	10,100
0.06	Interest	369,672	407,600	402,400	416,600	428,500	432,200	443,800
0.07	Environment\Fish & Wildlife	62,891	72,800	79,900	80,300	80,800	81,400	82,100
	Associated Project Costs:							
0.19	Bureau of Reclamation	52,270	60,800	38,500	76,700	91,900	44,100	45,700
0.20	Colville Settlement	0	0	15,300	15,900	16,500	17,100	17,800
0.21	Corps of Engineers	81,694	85,900	81,400	81,400	88,900	91,400	94,600
0.23	U.S. Fish & Wildlife Service	11,569	14,200	14,500	14,900	15,200	15,700	16,100
0.91	**Total operating expenses 1/**	**2,825,362**	**2,940,200**	**3,031,700**	**3,177,900**	**3,304,500**	**3,417,500**	**3,502,400**
	Capital investment:							
01.01	Marketing, Conservation & Production	108,126	153,400	84,200	81,300	86,100	87,400	86,500
01.02	Transmission Services	192,043	199,600	223,100	264,900	268,200	230,100	264,700
01.03	Associated Projects	22,150	26,100	25,300	16,400	15,900	29,400	46,400
01.04	Environment\Fish & Wildlife	34,560	40,700	32,100	30,800	31,600	32,000	32,400
01.05	Capital Equipment	12,876	13,400	13,300	12,500	12,700	13,200	15,000
01.06	Capitalized Bond Premiums	15,579	14,600	0	0	0	0	0
01.91	**Total capital investment 2/**	**385,334**	**447,800**	**378,000**	**405,900**	**404,500**	**392,100**	**445,000**
02.01	Reimbursable program	83,030	84,700	86,300	87,800	89,400	91,000	92,700
10.00	**Total obligations**	**3,293,716**	**3,472,700**	**3,496,000**	**3,671,600**	**3,798,400**	**3,900,600**	**4,040,100**
	Financing:							
21.90	Unobligated balance available, start of year: Treasury balance 3/	(78,004)	(29,049)	(109,649)	(109,649)	(109,649)	(109,649)	(109,649)
24.90	Unobligated balance available, end of year: Treasury balance 3/	29,049	109,649	109,649	109,649	109,649	109,649	109,649
25.00	Unobligated balance lapsing	(51)	0	0	0	0	0	0
39.00	**Budget authority (gross)**	**3,244,710**	**3,553,300**	**3,496,000**	**3,671,600**	**3,798,400**	**3,900,600**	**4,040,100**

1/ Reflects expensed obligations, not accrued expenses.
2/ Reflects capital obligations, not capital expenditures.
3/ FY 1993-99 Treasury balance and unobligated balance estimates assume that BPA will borrow the amount needed to finance the full capital program. Actual Treasury borrowing and cash balances will be different, depending on net revenues, Treasury interest rates, and other cash management factors. Borrowing could be higher such that cash balances at the end of each year could equal total reserves (shown on BP-5).

Program and Financing (continued)

	1994 est	1995 est.	1996 est	1997 est	1998 est	1999 est	2000 est
Budget Authority:							
61.00 Permanent Authority: Appropriations Transferred to other accounts 4/	0	0	(14,100)	(14,100)	(14,100)	(14,100)	(14,100)
67.15 Permanent Authority: Authority to borrow (indefinite) 5/	340,383	649,300	107,600	316,600	354,300	280,900	311,700
68.00 Spending authority from off-setting collections 4/	3,077,012	3,406,200	3,603,300	3,713,800	3,694,000	3,864,700	3,975,300
68.47 Portion applied to debt reduction 6/	(172,685)	(502,200)	(200,800)	(344,700)	(235,800)	(230,900)	(232,800)
68.90 **Spending authority from offsetting collections (adjusted) 4/**	**2,904,327**	**2,904,000**	**3,402,500**	**3,369,100**	**3,458,200**	**3,633,800**	**3,742,500**
Relation of obligations to outlays:							
71.00 Total obligations	3,293,716	3,472,700	3,496,000	3,671,600	3,798,400	3,900,600	4,040,100
Obligated balance, start of year:							
72.10 Receivables from other government accts.	(2,530)	(2,670)	(2,670)	(2,670)	(2,670)	(2,670)	(2,670)
72.47 Authority to borrow	206,432	206,315	198,315	218,815	218,815	218,815	218,815
72.90 Treasury balance 3/	131,771	169,676	169,676	169,676	169,676	169,676	169,676
Obligated balance, end of year:							
74.10 Receivables from other government accts.	2,670	2,670	2,670	2,670	2,670	2,670	2,670
74.47 Authority to borrow	(206,315)	(198,315)	(218,815)	(218,815)	(218,815)	(218,815)	(218,815)
74.90 Treasury balance 3/	(169,676)	(169,676)	(169,676)	(169,676)	(169,676)	(169,676)	(169,676)
87.00 Outlays (gross)	3,256,068	3,480,700	3,475,500	3,671,600	3,798,400	3,900,600	4,040,100
Adjustments to budget authority and outlays:							
Deductions for offsetting collections:							
88.00 Federal funds	(57,415)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)
88.40 Non-Federal sources 4/	(3,019,597)	(3,366,200)	(3,563,300)	(3,673,800)	(3,654,000)	(3,824,700)	(3,935,300)
88.90 Total, offsetting collections 4/	(3,077,012)	(3,406,200)	(3,603,300)	(3,713,800)	(3,694,000)	(3,864,700)	(3,975,300)
89.00 **Budget authority (net) 4/**	**167,698**	**147,100**	**(107,300)**	**(42,200)**	**104,400**	**35,900**	**64,800**
90.00 **Outlays (net)**	**179,056**	**74,500**	**(127,800)**	**(42,200)**	**104,400**	**35,900**	**64,800**

4/ It has been proposed that legislation be introduced to transfer responsibility for funding the operations and maintenance of the Mitchell Act Hatcheries from the National Marine Fisheries Service to Bonneville starting in FY 1996. This additional cost of $14,100 per year for FY 1996-2000 is included here as a negative appropriation under line 61.00. Offsetting collections, shown here on lines 68.00 and 68.90, have been increased by $14,100 to reflect the higher revenues needed to cover the additional costs. Net budget authority and net outlays are both decreased by the amount of the negative appropriation. If the legislation is enacted, Bonneville would most likely treat the funding of the Mitchell act hatcheries in the same manner it treats funding for the Lower Snake River Compensation Plan hatcheries, as an obligation and outlay under associated projects cost expense (lines 00.19-00.23).

5/ The Permanent Authority: Authority to borrow (indefinite) amount for FYs 1994-2000 reflects both BPA's capital program financing needs and either the use of, or creation of, deferred borrowing. Deferred borrowing is created when, as a cash and debt management decision, BPA uses cash from revenues to liquidate capital obligations in lieu of borrowing. This temporary use of cash on hand instead of borrowed funds creates the ability in future years to borrow money, when necessary or fiscally prudent, to finance normally revenue funded activities. Technical Executive Branch budget display and tracking requirements have modified the way BPA shows this deferred borrowing as a resource carried forward from year-to-year. This amount must therefore be added to, or subtracted from, BPA's current year borrowing authority amount, making this number a combination of capital program financing needs and the annual use, or creation of deferred borrowing. The FY 1989 Energy and Water Development Appropriations Act (P.L. 100-371 of 7/19/88) clarified that BPA has authority to incur obligations in excess of borrowing authority and cash in the BPA Fund. The two amounts which comprise the net amount on line 67.15 above are as follows:

Borrowing Authority:	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
to finance capital obligations	385,334	447,800	378,000	405,900	404,500	392,100	445,000
to finance other obligations	(44,951)	201,500	(270,400)	(89,300)	(50,200)	(111,200)	(133,300)
Total Borrowing Authority (67.90)	**340,383**	**649,300**	**107,600**	**316,600**	**354,300**	**280,900**	**311,700**

6/ Includes amortization of BPA and Corps of Engineers appropriations and amortization of BPA bonds. Line 68.47 is referred to as capital transfers on BP-3.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

A-11-32C

PROGRAM & FINANCING SUMMARY
Impact of Proposed Mitchell Act Hatcheries Legislation
(in thousands of dollars)

Identification Codes: 89-4045-2-3-271	1994 actual	1995 est.	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
10.00 Total obligations	--	--	0	0	0	0	0
61.00 Permanent Authority: Appropriations Transferred to other accounts			(14,100)	(14,100)	(14,100)	(14,100)	(14,100)
68.00 Spending Authority from Offsetting Collections	--	--	14,100	14,100	14,100	14,100	14,100
68.47 Portion applied to Debt Reduction 1/	--	--	0	0	0	0	0
68.90 Spending Authority from Offsetting Collections (adjusted)	--	--	14,100	14,100	14,100	14,100	14,100
88.40 Non-Federal sources	--	--	14,100	14,100	14,100	14,100	14,100
88.90 Total, Offsetting Collections	--	--	(14,100)	(14,100)	(14,100)	(14,100)	(14,100)
89.00 Budget Authority, net	--	--	(14,100)	(14,100)	(14,100)	(14,100)	(14,100)
90.00 Outlays, net	--	--	(14,100)	(14,100)	(14,100)	(14,100)	(14,100)

NOTE: Legislation is being proposed that will, starting in FY 1996, transfer funding responsibilities for the fish hatcheries established under the Mitchell Act from the National Marine Fisheries Service (NMFS) to the Bonneville Power Administration. This table has been included here to clearly show the impact of this additional funding requirement on Bonneville's P&F. The amounts shown here are currently included in the totals of the P&F statement, as indicated in footnote 4 of the P&F. The funding amount of $14.1 million in FY 1996, straightlined through FY 2000, was developed in consultation with the Department of Commerce. This P&F assumes that revenues, and hence, offsetting collections, will be increased to fund this new cost. Both net budget authority and net outlays are decreased by the amount of the negative appropriation. If the legislation is enacted, Bonneville would most likely treat the funding of the Mitchell act hatcheries in the same manner it treats funding for the Lower Snake River Compensation Plan hatcheries, as an obligation and outlay under associated projects cost expense.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION FUND
CURRENT SERVICES

ANALYSIS OF RESOURCES
(in thousands of dollars)

Budget Account: 89-4045-0-3-271

	FY 1993	FY 1994	FY 1995 Agency Submittal
Budget Authority (net)	167,698	147,100	(107,300)
Outlays (net)	179,056	74,500	(127,800)
Full-time equivalent employment (workyears): Total	3,705	3,437	3,325

	FY 1996	FY 1997	FY 1998	FY 1999
Budget Authority (net)	(42,200)	104,400	35,900	64,800
Outlays (net)	(42,200)	104,400	35,900	64,800

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES

A-11-338

STATUS OF DIRECT LOANS

(in thousands of dollars)

Budget Account: 89-4045-0-3-271

		1994 actual	1995 est.	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
	Position with respect to appropriations act limitation on obligations:							
1111	Limitation on direct loans to the public	0	0	0	0	0	0	0
1112	Unobligated direct loan limitation	0	0	0	0	0	0	0
1150	Total, direct loan obligations	0	0	0	0	0	0	0
	Cumulative balance of direct loans outstanding:							
1210	Outstanding, start of year	2,963	2,699	2,400	2,200	2,000	1,800	1,600
	Disbursements:							
1231	Direct loan disbursements	0	0	0	0	0	0	0
	Repayments:							
1251	Repayments and prepayments	(264)	(299)	(200)	(200)	(200)	(200)	(200)
1290	Outstanding, end of year	2,699	2,400	2,200	2,000	1,800	1,600	1,400

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES

A-11-33B

STATUS OF DIRECT LOANS / INCLUDING NEW DIRECT LOAN AUTHORITY IN FY 1996-2000

Budget Account: 89-4045-0-3-271

(in thousands of dollars)

	Position with respect to appropriations act limitation on obligations:	1994 actual	1995 est.	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
1111	Limitation on direct loans to the public	0	0	29,000	33,200	28,400	28,400	28,400
1112	Unobligated direct loan limitation	0	0	0	0	0	0	0
1150	Total, direct loan obligations	0	0	29,000	33,200	28,400	28,400	28,400
	Cumulative balance of direct loans outstanding:							
1210	Outstanding, start of year	2,963	2,699	2,400	31,200	58,400	74,200	84,200
	Disbursements:							
1231	Direct loan disbursements	0	0	29,000	33,200	28,400	28,400	28,400
	Repayments:							
1251	Repayments and prepayments	(264)	(299)	(200)	(6,000)	(12,600)	(18,400)	(24,200)
1290	Outstanding, end of year	2,699	2,400	31,200	58,400	74,200	84,200	88,400

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

PROGRAM AND PERFORMANCE

The Bonneville Power Administration (Bonneville) is the Federal electric power marketing agency in the Pacific Northwest. Bonneville markets hydroelectric power from 21 multipurpose water resource projects of the U.S. Army Corps of Engineers and 9 projects of the U.S. Bureau of Reclamation, plus some energy from non-Federal generating projects in the region. These generating resources and Bonneville's transmission system, planned by the end of FY 1996 to consist of an estimated 14,800 circuit-miles of high-voltage transmission lines and 400 substations, are operated as an integrated power system with operating and financial results combined and reported as the Federal Columbia River Power System (FCRPS). Bonneville is the largest power wholesaler in the Northwest and provides about one-half of the region's electric energy supply and about four-fifths of the region's electric power transmission capacity.

Bonneville is responsible for meeting the net firm power requirements of its requesting customers through a variety of means, including energy conservation programs, acquisition of renewable and other resources, and power exchanges with utilities both inside and outside the region.

Bonneville will finance its operations on the basis of the self-financing authority provided by the Federal Columbia River Transmission System Act of 1974 (Transmission Act) (Public Law 93-454) and the new borrowing authority provided by the Pacific Northwest Electric Power Planning and Conservation Act (Pacific Northwest Power Act) (Public Law 96-501) for energy conservation, renewable energy resources, and capital fish facilities. Authority to borrow is available to the Bonneville on a permanent, indefinite basis. The amount of borrowing outstanding at any time cannot exceed $3.75 billion.

Operating Expenses:

Marketing, Conservation & Production: Provides for the orderly planning, contractual acquisition, and oversight of reliable, cost-effective resources, including fuel switching and cost-effective conservation measures. These resources are needed to serve Bonneville's portion of the region's forecasted net electric load requirements.

Provides for forecasting regional demand; negotiating power sales and wheeling contracts, billing, and servicing these contracts; reviewing and establishing wholesale power and wheeling rates; and scheduling of power.

Residential Exchange: Provides for extending the benefits of low-cost Federal power to the residential and small farm customers of investor-owned and publicly-owned utilities in accordance with the Pacific Northwest Power Act.

Transmission Services: Provides funding from revenues for electric transmission research and development and program support of the capital investment program described below for transmission services.

Provides for operating an estimated 14,800 miles of line and 400 substations and for maintaining the facilities and equipment of the Bonneville transmission system in 1996.

Environment/Fish and Wildlife: Provides the annual expenses for environmental activities, and protection, mitigation and enhancement of fish and wildlife affected by Federal hydroelectric facilities on the Columbia River and its tributaries, in

accordance with the Pacific Northwest Power Act. Legislation that modifies 16 U.S.C., sections 755-757, is proposed to authorize the Bonneville Power Administration to fund the operation and maintenance of "Mitchell Act" facilities through the transfer of funds to the National Oceanic and Atmospheric Administration. Currently, the National Oceanic and Atmospheric Administration is responsible for funding these facilities. Under this change, the region is provided an increased role in the management of these hatchery facilities in order to better protect fishery resources affected by dam construction.

Planning Council: Provides for activities of the Pacific Northwest Electric Power and Conservation Planning Council required by the Pacific Northwest Power Act.

Interest: Provides for payments to the U.S. Treasury for interest on borrowings to finance Bonneville's transmission services, conservation, capital equipment, environment, fish and wildlife, and associated projects capital programs under $3.75 billion borrowing authority provided by the Transmission Act as amended by the Pacific Northwest Power Act and replenished by Public Law 98-50. This category also includes interest on Corps of Engineers, Bonneville, and U.S. Bureau of Reclamation appropriated debt.

Associated Project Costs: Provides for repayment of the operation and maintenance (O&M) costs of the 30 U.S. Army Corps of Engineers and U.S. Bureau of Reclamation power generating projects, amortization on the U.S. Bureau of Reclamation capital investment in power generating facilities, and irrigation assistance at Bureau facilities.

Reimbursables

Provides for reimbursable power purchases, and for services such as construction, operation and maintenance of transmission facilities when requested and financed by other entities. Also includes the coordination agreement payments to the Federal Energy Regulatory Commission.

Capital Investments:

Marketing, Conservation & Production: Provides for funding of cost-effective conservation measures.

Transmission Services: Provides for the planning, design and construction of transmission lines, substation and control system additions, replacements, and enhancements to the FCRPS transmission system for a reliable, efficient and cost-effective regional transmission system. During FY 1996, Bonneville plans to initiate design and construction of the Eastern Washington reinforcement facilities, and energize the new Munro Control Center, near Spokane, Washington, along with a variety of upgrades and additions to existing facilities.

Provides for planning, design, and construction work to repair or replace existing transmission lines, substations, control systems, and general facilities of the FCRPS transmission system.

Capital Equipment: Provides for general purpose ADP equipment, office furniture and equipment, and capital software development in support of all Bonneville programs.

Environment/Fish and Wildlife: Provides for capital investments to implement environmental activities, and to protect, mitigate and enhance the fish and wildlife affected by Federal hydroelectric facilities on the Columbia River and its tributaries, in accordance with the Pacific Northwest Power Act.

Associated Projects - Capital: Provides for direct funding of additions, improvements, and replacements at existing Federal hydroelectric projects in the Northwest. Bonneville's FY 1996 budget includes direct funding for four Bureau of Reclamation projects and one Corps of Engineers project.

Contingencies: Although contingencies are not specifically funded, the need may arise to provide for purchase of power in low-water years; for repair and/or replacement of facilities affected by natural and human-made emergencies, including the resulting additional costs for contracting, construction, and operation and maintenance work; for unavoidable increased costs for the planned program due to necessary but unforeseen adjustments, including engineering and design changes, contractor and other claims and reallocations; or for payment of a retrospective premium adjustment in excess nuclear property insurance.

Financing: The Transmission Act provides for the use by Bonneville of all receipts, collections, and recoveries in cash from all sources, including the sale of bonds, to finance the annual budget programs of Bonneville. These receipts result primarily from the sale of power and wheeling services. The Transmission Act also provides for authority to borrow from the U.S. Treasury at rates comparable to open market rates for similar issues. As amended by the Pacific Northwest Power Act and replenished by Public Law 98-50, it allows for $3.75 billion of borrowing to be outstanding at any time. The fiscal year 1996 capital program obligations are estimated to be $378.0 million. To the extent BPA capital borrowing authority is insufficient in 1996, BPA would use cash reserves generated by revenues from customers, if available, to finance some of these investments.

In 1994, Bonneville made payments to the Treasury of $702.7 million (includes $684.7 million cash payment and $18 million 4H10(c) credit for fish costs) and also expects to make payments of $1,083.7 million in 1995 and $762.4 million in 1996, on a current services basis. The 1996 payment will be distributed as follows: U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and U.S. Fish and Wildlife Service O&M ($134.4 million),Colville Settlement ($15.3 million), interest expense on bonds and appropriations ($402.4 million), allowance for funds used during construction--capitalized interest ($9.5 million), and amortization ($200.8 million).

Direct loans: During 1996 new direct loan obligations may not exceed $29 million. As required by the Federal Credit Reform Act of 1990, an account records, for this program, the subsidy costs, if any, associated with the direct loans obligated in 1992 and beyond (including modifications of direct loans that resulted from obligations in any year). The subsidy amounts are estimated on a present value basis.

Operating results: Total revenues and reimbursements are forecast at approximately $3,592.7 million in 1996.

It should be noted that Bonneville's revenue forecasts are based on several critical assumptions about both the supply of and demand for Federal energy. During the operating year, deviation from the conditions assumed in a rate case may result in a variation in actual revenues of several hundred million dollars from the forecast.

As part of the Administration's proposal to reinvent the Department of Energy, legislation is being proposed in FY 1996 to make Bonneville a wholly-owned government corporation under the Government Corporation Control Act. This would increase BPA's flexibility over personnel, procurement, financial, budget, and litigation functions to allow BPA to compete more effectively in electric power markets.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION

REVENUE AND RECEIPT REPORT
(in thousands of dollars)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Gross Revenues 1/							
Federal	57,415	40,000	40,000	40,000	40,000	40,000	40,000
Non-Federal Sources	2,936,567	3,281,500	3,563,300	3,673,800	3,654,000	3,824,700	3,935,300
Proprietary Receipts							
Reclamation Fund, all other, sale of electric energy (Reclamation Fund) 2/	84,084	93,800	69,300	109,700	125,600	74,300	75,900
Repayments on misc. recoverable costs, not otherwise classified (COE & LSRCP) 3/	74,563	100,100	95,900	96,300	104,100	107,100	110,700
Power Marketed (thousands of gigawatt/hours sold) 4/	82	86	86	85	85	85	85

1/ FY 1994 revenues reflect audited actuals. FY 1995 revenues reflect estimates developed for BPA's 4th Quarter Review. FY 1996-2000 revenues reflect expensed obligations in this budget, less amortization of Bureau appropriations and irrigation assistance, plus depreciation estimates and net revenue amounts developed for the final Record of Decision. Does not include Reimbursements.

2/ Includes amortization of appropriations and irrigation assistance, as well as O&M and interest costs for the Bureau of Reclamation. Represents transfers to Account #895000.26

3/ Includes O&M costs only for the Corp of Engineers and the Lower Snake River Compensation Plan activities. Represents transfers to Account #892889. The FY 1994 total includes a credit under section 4h10c of the Regional Power Act of $17,800 for ESA costs. FY 1996-2000 amounts shown here include an additional $14,100 in proprietary receipts that would result from legislation, to be proposed, transfering funding responsibilities for the Mitchell Act Hatcheries from the National Marine Fisheries Service to Bonneville.

4/ Power Marketed shown net of Residential Exchange and assumes the average of 50 year average streamflow.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET SUBMITTAL
BONNEVILLE POWER ADMINISTRATION
CURRENT SERVICES

BALANCE SHEET
(in thousands of dollars)

		1993 actual	1994 actual	1995 est.	1996 est.
	ASSETS				
	Federal assets:				
1101	Fund balance with Treasury	207,331	196,406	87,050	299,950
1106	Investments in US Securities	2,530	2,670	4,000	4,000
	Non-Federal assets				
1206	Receivables (net)	96,105	136,417	136,700	136,900
1207	Advances and prepayments	891	688	1,000	1,000
1601	Direct Loans, gross	2,963	2,699	2,400	2,200
	Other Federal assets				
1801	Cash and other monetary assets	101	51	50	50
1802	Inventories and related properties	75,284	72,739	70,000	70,000
1803	Property, plant, and equipment (net)	3,063,729	3,137,490	3,252,790	3,359,290
1901	Other assets (net)	928,487	1,023,102	1,180,603	1,271,603
1999	**Total assets**	**4,377,421**	**4,672,262**	**4,734,593**	**5,144,993**
	LIABILITIES				
	Federal liabilities				
2101	Accounts payable	270	275	300	300
2102	Interest payable	36,123	43,310	40,000	40,000
	Non-Federal liabilities				
2201	Accounts payable	98,089	141,802	139,700	139,700
2203	Debt	2,331,873	2,616,500	2,857,100	2,721,700
2205	Lease Liabilities	15,864	15,713	15,500	15,500
2207	Other	48,030	67,813	195,600	195,600
2999	**Total liabilities**	**2,530,249**	**2,885,213**	**3,048,200**	**3,112,800**
	Net Position:				
3100	Appropriated Capital	1,476,978	1,476,978	1,476,978	1,476,978
3200	Invested Capital	25,285	(10,386)	(35,786)	(63,086)
3300	Cumulative results of operations	344,909	220,457	245,201	618,301
3999	**Total net position**	**1,847,172**	**1,687,049**	**1,686,393**	**2,032,193**
4999	**Total liabilities and net position**	**4,377,421**	**4,672,262**	**4,734,593**	**5,144,993**

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
BONNEVILLE POWER ADMINISTRATION
PENDING LITIGATION

I. Supply System Litigation

A. Bonneville Power Administration v. Washington Public Power Supply System, No. C82-1252 (W.D. Wash. filed October 26, 1982) originally filed as Washington Public Power Supply System v. Alder Mutual Light.

This case has become a vehicle for several items of litigation not related to the issues in the case as originally filed. Pertinent to this report are: (1) cost-sharing (original case); and (2) Investor-Owned Utilities' (hereafter IOUs) Washington Nuclear Project (hereafter WNP) No. 3 litigation.

Cost Sharing

1. Nature of the Case

Washington Public Power Supply System Projects 1 and 4 (WNP-1 and WNP-4) and Projects 3 and 5 (WNP-3 and WNP-5) were to be built as two sets of "twins", sharing many common elements, including design and some shared facilities. Costs of constructing twinned plants were to be shared equitably. Chemical Bank, Bond Fund Trustee for terminated plants 4 and 5, now seeks to have the terminated plants' portion of those shared costs retroactively reallocated to their mothballed twins, WNP-1 and WNP-3. Chemical Bank has asserted that such a reallocation, including interest, could amount to $1 billion. BPA is ultimately responsible, through net-billing, to pay for any reallocation ordered by the Court.

2. Status of the Case

On May 11, 1989 the District Court partially granted Chemical Bank's motion for summary judgment. The court held that Bond Resolution 890, which authorized the issuance of bonds to finance Projects 4 and 5, controls the disbursement of bond proceeds, but disagreed with Chemical Bank's contention that cost sharing is prohibited by the Bond Resolution. The Court asked for additional briefing on the proper basis for the allocation of costs between twin projects under the provisions of the Bond Resolution. The court also granted Chemical

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Bank a lien on any funds improperly expended as a result of costs misallocated to projects 4 and 5. On October 5, 1990, the District Court granted Chemical Bank summary judgment on its claim that cost were improperly allocated between Projects 4 and 5. The Court ruled that principles of equitable cost allocation required the application of incremental cost sharing. The Court ruled that because such principles were not applied Projects 4 and 5 "apparently bore more than their fair and equitable share of the construction costs." The Court ordered an accounting of all uses of bond proceeds of Projects 4 and 5. BPA and a number of other parties appealed the District Court's May 11, 1989 and October 5, 1990 orders.

On February 25, 1992, the United States Court of Appeals for the Ninth Circuit reversed the District Court's ruling that incremental cost sharing should have been applied and directed the district court to enter partial summary judgment that proportional cost sharing adopted by the Supply System were the proper method for allocating costs. The court remanded the case back to the district court to determine the proper application of proportional cost sharing principles to individual costs. Pursuant to the direction the Ninth Circuit, on October 13, 1992, the district court ordered that proportional cost sharing principles as adopted by the Supply System, will be applied as the proper method of allocation of such costs, but did not approve any proper allocation of costs. The Ninth Circuit also reversed the District Court's ruling that Chemical Bank has a lien on any funds improperly expended. But the court held that if Chemical were to prove that funds of Project 4 and 5 were improperly spent on other projects, it might then be entitled to an equitable lien on the Projects which benefited. The stay of proceeding in the District Court expired on August 1, 1992 and the discovery phase of the litigation is now underway. Trial is scheduled to begin on July 15, 1995.

B. Clallam and Snohomish PUD v. United States, No. 29-83-C (Ct. Cl. filed January 18, 1983); City of Tacoma v. United States, No. 514-83-C (Ct. Cl. filed August 2, 1983).

1. Nature of the Case

Clallam County PUD No. 1, and Snohomish PUD initiated further litigation alleging the same claims stated in the Benton County case, and alleging additional grounds for relief, including a breach by BPA of its oversight duties with respect to Projects 1, 2, and 3.

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On August 2, 1983 the City of Tacoma and Nespelem Valley Electric Cooperative, Inc. filed a complaint in U.S. Claims Court alleging substantially the same contentions contained in Benton County. City of Tacoma and Benton County were consolidated August 31, 1983.

2. Status of the Case

The claims of Clallum and Snohomish regarding BPA's oversight of Projects 4 and 5 will also be dismissed as part of the MDL-551 settlement. That settlement does not effect the claims of Snohomish or Clallam relating to Projects 1, 2 or 3. Clallam settled these claims on June 22, 1990.

In May 1993 Snohomish filed an amended complaint pursuant to the stipulation of the parties. The amended complaint omitted Clallum and all allegations and claims related to WNP-4 and 5 pursuant to Snohomish's settlement of MDL-551. The remaining claims include allegations that BPA violated two Snohomish power sales contracts, that BPA unlawfully took Snohomish's property by violation of statutory preference provisions, that BPA violated statutory preference provisions, and that BPA violated a duty under the Project Agreements to oversee construction of WNP-1, 2, and 3. Snohomish also added six claims to the amended complaint related to WNP-1 and the settlement of the investor-owned utility and Supply System dispute over the payment provisions of the WNP-1 Project Exchange Agreements. Snohomish alleges in these claims that BPA violated the Project Exchange Agreements and express and implied provisions of Snohomish's net billing agreements.

On June 3, 1993 BPA filed a motion to dismiss the Oversight Claims and the Exchange Settlement Agreement contract claims. Briefing on the motion was completed and the parties were awaiting a ruling. However, as a result of discussions among the Court and the parties, BPA amended its motion dismiss to a motion for summary judgment. BPA filed its motion for summary judgment on March 23, 1994. Snohomish's response to BPA's motion was filed on September 21, 1994 and BPA's response was filed October 11, 1994. The motion is not yet scheduled for argument.

C. In re Washington Public Power Supply System Securities Litigation, J.P.M.D.L. No. 551 (W.D. Wash. filed August 23, 1983).

1. Nature of the Case

This is a consolidated proceeding involving 13 separate class actions brought on behalf of those who purchased WNP-4 and 5 bonds prior to the termination of the projects on January 22, 1982. Additional lawsuits have been brought on behalf of those who purchased WNP-4 and 5 bonds during the period from January 22, 1982, until the decision of the Washington Supreme Court on June 15, 1983. The bond purchasers are suing the same defendants as in the Chemical Bank suit as well as the underwriters, attorneys, architect/engineers, financial consultant, consulting engineer, and attorneys involved with the participants in the Supply System WNP-4 and 5.

In late 1983 class plaintiffs solicited bondholders to file tort claims against BPA on the alleged grounds that BPA undertook an active role in furthering construction of WNP-4 and 5. Upward of 15,000 tort claims have been filed against BPA for an amount in excess of $1 billion. Class plaintiffs also filed a claim purporting to represent all similarly situated bond purchasers. In September 1984, after the six-month statutory waiting period passed under the FTCA, class plaintiffs amended their complaint to plead a negligence claim against the United States which is substantially identical to the claim asserted by Chemical Bank and joined as plaintiffs approximately 10,000 individual claimants. Subsequently additional individual plaintiffs have been joined as their six-month statutory waiting period passed.

Utility Tort Claims: In late February and early March 1985 BPA received tort claims from 10 Oregon utilities and 5 Oregon utility managers alleging liabilities arising out of the construction and financing of WNP-4 and 5. Each claim alleges damages of $2.25 billion. Those claims are not yet connected with the MDL 551 litigation, however, they arise from the same factual situation. These utilities and managers have not sued the United States since filing these claims. If the settlement is approved, these claims would be barred.

2. Status of the Case

All parties have settled all their claims, including claims against the government. The settlement agreements were approved by the Honorable Judge William Browning on September 5, 1989. By order dated August 15, 1990, Judge Browning approved the allocation plan proposed by the class plaintiffs and the Trustee. Certain bondholders appealed the settlement agreements and the allocation decision. These appeals were decided by the Ninth Circuit on February 4, 1992, Class Plaintiffs v. City of Seattle, No. 90-16446, MAL-551-WEB. The appellate court sustained the settlements and the allocation of proceeds in all respects.

The bondholder groups filed petitions for rehearing and rehearing en banc, which were denied by the Court of Appeals on May 20, 1992. On August 17, 1992 the "Hoffer" group of bondholders filed a petition for certiorari in the Supreme Court. (The "Heerey" group, the other major bondholder group, settled with the Trustee for the bondholders and the attorneys for the class plaintiffs and did not file a petition). On November 2, 1992 the Supreme Court denied the petition for certiorari. As a result the Settlement Agreements which settle all claims, including claims against the United States, are now final.

II. Rates Litigation

Washington Utilities and Transportation Commission v. FERC, No. 91-70619 (9th Cir.); Puget Sound Power & Light Company v. FERC, No. 91-70628 (9th Cir.)

1. Nature of the Case

The WUTC and Puget challenge BPA's average system cost determination regarding the exchangeability of costs related to WNP-3.

2. Status of the Case

On June 7, 1994, the Ninth Circuit dismissed the first two dockets challenging BPA's determinations. Additional dockets regarding the same subject matter were previously stayed and have not yet been dismissed.

III. Environment, and Fish/Wildlife Litigation

A. Aluminum Company of America v. NMFS, Nos. 93-35532, et al. (9th Circuit)

1. Nature of the Case

Appeal from district court decision dismissing numerous utility and industry groups from challenging actions of U.S. under the Endangered Species Act for lack of standing.

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2. Status of the Case

The Ninth Circuit reversed the district court and held that the petitioners, BPA's direct service industrial customers and utility customers, had standing to sue the United States for alleged violations of the ESA. The impact of the case is that it allows parties with an economic interest in species survival to sue under the ESA. In particular, it will allow these parties to file a Complaint in district court for ESA violations related to NMFS Biological Opinions in the harvest, habitat or hatchery sectors.

B. Pacific Northwest Generating Cooperative v. BPA, No. 93-70847, (9th Cir.); Aluminum Co. of America v. BPA, (9th Cir.)

1. Nature of the Case

Lawsuits filed on October 22, 1993 in Ninth Circuit against BPA under direct review provisions of Northwest Power Act. Petitioners challenge BPA decisions regarding 1993 operation of the Federal Columbia River Power System for alleged violations of NEPA and ESA.

2. Status of the Case

The Administrative Record Index was filed December 6, 1993. A briefing schedule has not been set.

C. Idaho Department of Fish and Game v. National Marine Fisheries Service, (D. Or. No. 93-1420MA).

1. Nature of the Case

Lawsuits filed by environmental groups and the state of Idaho challenge actions of NMFS, the Corps of Engineers, and Bureau of Reclamation regarding 1993 operation of the Federal Columbia River Power System, for alleged violations of the Endangered Species Act and NEPA. Numerous parties have intervened, such as utility and industry groups who will be raising counter-claims against Idaho, alleging violations of the ESA. This all relates to the issue of salmon survival. BPA was not named a defendant because jurisdiction over BPA is vested with the U.S. Court of Appeals for the Ninth Circuit.

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2. Status of the Case

The District Court ruled that National Marine Fisheries Service (NMFS) 1993 Biological Opinion on the Federal Columbia River Power System (FCRPS) violated the Endangered Species Act (ESA). Judge Marsh found that NMFS' conclusion that operation of the FCRPS would not jeopardize the listed species was unreasonable and, he set aside NMFS Biological Opinion (BO) as well as the Records of Decision (RODs) issued by the Corps of Engineers and Bureau of Reclamation, which relied on the NMFS BO.

Although, (for jurisdictional reasons), BPA was not a party to the litigation, BPA is directly impacted by the litigation. In issuing relief, the District Court did not enjoin or mandate any particular operation of the FCRPS. Instead, the United States has entered into settlement discussions with the plaintiffs to reevaluate and reconsider NMFS 1994 - 1998 BO on the FCRPS in light of the findings of Judge Marsh on the 1993 BO. The discussions are ongoing, and the case has not been appealed by the United States.

D. Northwest Resource Information Center, et al. v. Northwest Power Planning Council, Nos. 92-70190 and consolidated cases, 9th Cir., September 9, 1994.

1. Nature of the Case

In NRIC, the Ninth Circuit held that the Northwest Power Planning Council violated the section 4 of the Northwest Power Act (NPA) because it (a) failed to explain a statutory basis for its rejection of recommendations of fishery managers, and (b) failed to evaluate proposed program measures against sound biological objection, as required by the statute. In addition, the Court found that the Council may have failed to accord proper deference to fishery managers and may have failed to fully comply with other substantive criteria of the NPA.

2. Status of the Case

The case does not have a direct, immediate impact on BPA because BPA was not a defendant, and the court did not impose any substantive relief against the Council. Rather, the relief was procedural. The Court remanded the Council's program back to the Council for further consideration.

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E. American Rivers, et al. v. National Marine Fisheries Service, et al., No. 94-940-MA, U.S. District Court for the District of Oregon, filed Aug. 4, 1994.

1. Nature of the Case

American Rivers and other environmental groups sued the National Marine Fisheries Service, the Corps of Engineers (COE) and Bureau of Reclamation (BOR) for alleged violations of the Endangered Species Act (ESA). The plaintiffs allege that the 1994 - 98 Biological Opinion (BO) issued by NMFS respecting operation of the Federal Columbia River Power System (FCRPS), and the implementation of the BO by COE and BOR violate the law.

2. Status of the Case

Judge Marsh granted the United States' motion to stay the case until February 1, 1995.

F. Northwest Environmental Defense Center v. Jura, 9th Cir., No. 90-70548, filed October 5, 1990.

1. Nature of the Case

Petitioner for review of BPA final action under the Northwest Power Act and National Environmental Policy Act (NEPA). Petitioners allege that BPA did not provide fish and wildlife "equitable treatment" when BPA executed the Non-Treaty Storage Agreement, and that BPA should have prepared an Environmental Impact Statement (EIS) under NEPA, rather than an Environmental Assessment (EA).

2. Status of the Case

BPA oral argument was held on November 4, 1993.

G. Northwest Resources Information Center, et al. v. National Marine Fisheries Service, et al., No. C9201156; U. S. District Court for the Western District of Wash., filed July 20, 1992.

1. Nature of the Case

Lawsuit filed by numerous environmental groups alleging that actions taken by the National Marine Fisheries Service (NMFS), the Bureau of Reclamation, Corps of Engineers, and BPA relating to the operation and management of the Federal Columbia River Power System violate the Endangered Species Act and jeopardize the continued existence of certain salmon species listed as threatened or endangered.

2. Status of the Case

BPA filed a motion to dismiss BPA for lack of jurisdiction. The court granted BPA's motion, and BPA was dismissed from the litigation. An appeal has been briefed and is pending before the 9th Circuit.

H. Alcoa, et al. v. Franklin, et al; CV No. 92-972 FR; U.S. District Court for the District of Oregon, filed August 5, 1992. Pacific Northwest Generating Cooperatives, et al. v. Franklin, et al., CV92-973-JE; U.S. District Court for the District of Oregon, filed August 6, 1992. Public Power Council, et al. v. Franklin, et al., CV92-1040-JU; U. S. District Court for the District of Oregon, filed August 24, 1992.

1. Nature of the Case

These three lawsuits were filed by various BPA customer groups alleging that actions taken by nine Federal agencies violate the Endangered Species Act for failing to consider and assess all actions, such as harvest, hatchery and habitat activities, that may affect or jeopardize the continued existence of certain salmon species listed as threatened or endangered.

2. Status of the Case

The U.S. Department of Justice filed a motion for summary judgment arguing, among other things, that plaintiffs lacked standing to raise their claims. On April 1, 1993, the court granted the government's motion, and dismissed plaintiff's claims. An appeal was filed with the 9th Circuit and has been briefed. Oral argument has not been scheduled.

G. Emerald Peoples Utility District, et al. v. Randy Hardy, et al., Case No. 94-1311 AS, United States District Court for the District of Oregon (November 1, 1994).

1. Nature of the Case

This action is a Petition for Review of BPA's determination to approve the termination of the Trojan Nuclear Project and to approve certain aspects of the decommissioning of Trojan. Plaintiffs assert that BPA should have prepared environmental documentation under the National Environmental Policy Act, 42 U.S.C. 4321 et seq., prior to making these decisions. Plaintiffs seek an injunction against the removal of certain large components to a storage facility at Hanford, Washington.

2. Status of the Case

Plaintiffs have asked for a temporary restraining order (TRO) and a preliminary injunction pending resolution of the case on the merits. BPA has responded to the Plaintiff's request for TRO and preliminary injunction. BPA has also filed a motion to dismiss the case.

IV. Nonfederal Resources and Finance Litigation

A. SESCO, Inc., a Massachusetts Corporation v. Bonneville Power Administration, 9th Cir. Court of Appeals No. 93-70878, (9th Cir.).

1. Nature of the Case

SESCO filed a Petition for Review under § 839(e)(5) of the Northwest Power Act. The petition requests the court to review the Administrator's Record of Decision to terminate negotiations with SESCO on its Free Power Program residential weatherization conservation projects. SESCO submitted proposals concerning the conservation projects pursuant to BPA's Solicitation for the Competitive Acquisition of Firm Electric Energy under its 1990 Resource Acquisition Program.

2. Status of the Case

SESCO filed its opening brief on February 22, 1994. BPA filed its brief on April 20, 1994. SESCO filed its reply brief on June 16, 1994. Parties await scheduling of oral argument.

B. Vulcan Power Company v. Bonneville Power Administration, Ninth Circuit Court of Appeals, No. 94-70748

1. Nature of the Case

Vulcan Power Company filed a Petition for Review by the court of two related decisions of the BPA dated September 15 and September 16, 1994, respectively, to (1) reject a request by Vulcan Power Company to reopen the process used to select the developer for a geothermal pilot project at Newberry Volcano, Oregon, and (2) execute a power purchase agreement with CE Newberry, Inc. to develop a 30 megawatt geothermal pilot project at Newberry.

2. Status of the Case

BPA's Official Record must be filed with the court by December 27, 1994. Vulcan Power Company's brief is due on February 6, 1995.

C. Benton Rural Electric Association v. BPA, Docket 94-70467 (9th Cir. August 11, 1994).

1. Nature of the Case

Petition for Review of Administrator's Average System Cost Determination.

Benton REA filed with the 9th Circuit seeking review of the Administrator's Final Average System Cost Report dated May 13, 1994, concerning the Average System Cost filing by Benton Rural Electric Administration pursuant to section 5(c) of the Northwest Power Act, 16 U.S.C. § 839c(c).

2. Status of the Case

By order dated October 7, 1994, the court directed that within 28 days of the filing dated of the order, petitioner Benton REA shall file a motion or a stipulation to dismiss the action, or contact the Court Mediator.

By letter dated October 6, 1994 (prior to the filing of the Court's October 7, 1994, Order) Petitioner Benton REA filed a Motion to Dismiss the action without prejudice and without costs to any party.

V. Power and Transmission Litigation

A. Koocanusa International Coalitions v. Corps of Engineers, et. al., United States District Court of Montana, No. 93-71-M-CCL

1. Nature of the Case

A coalition of boating and recreational interests located on the Libby Reservoir (Lake Koocanusa, Idaho) filed a Complaint and Motion for Temporary Restraining Order (TRO) on June 10, 1993 in Federal District Court, Helena, Montana, to enjoin BPA and the Corps from releasing up to 740,000 acre feet of water this summer from the Reservoir. BPA and the Corps filed extensive responses. More than half of the water release described by Complaint (400,000 acre feet) has already occurred and there is a high probability that the remainder (340,000 acre feet) will be released from Canadian reservoirs and not Libby.

2. Status of the Case

Plaintiff's motion for a TRO was denied, and it appears likely that the Complaint will be dismissed.

VI. Federal Resources, Conservation, Torts, and EEO Litigation

Tort Claims

A. JOB Line Construction and Bonneville Power Administration, Department of Energy Board of Contract Appeals, EBCA No.C-94.

1. Nature of the Case

Construction Contract dispute for an unspecified amount, plus costs and attorneys fees over indemnification clause of a contract. This case is related to Eagle Helicopters v. United States, a tort claim case in United States

District Court. See Eagle Helicopters at Item C of this section for facts. JOB Line Construction is a subcontractor of the prime contractor, Eagle Helicopters, Inc.

2. Status of the Case

Complaint filed on August 8, 1994. An answer has been filed. The Board wishes to address whether it has jurisdiction to hear the case and has requested briefs on the issue from the parties.

B. Thomas A. Lozeau, Jr. v. United States, CV-94-12-M-CCL, United States District Court for the District of Montana, (Missoula Division).

1. Nature of the Case

Claim for personal injuries in the amount of $250,000.00 made under the Federal Tort Claims Act. Claimant was rear-ended by a BPA employee one mile north of Hot Springs, Montana. The claim was not settled at the administrative level and claimant filed suit in U.S. District Court in June, 1994.

2. Status of the Case

The case was settled for $8,0000.00.

C. Eagle Helicopters, Inc. v. United States, 92-0350-N-HLR, U.S. District Court, Dist. of Idaho.

1. Nature of the Case

This is a claim for contribution against BPA resulting from a judgment against Eagle Helicopters in state court litigation. The claim is for $309,331.81, plus half of any additional amounts Eagle must pay if the State court judgment is affirmed on appeal. In 1986, BPA entered into a contract with JOB construction to construct portions of a BPA transmission line. A subcontract was entered into between JOB and EAGLE Helicopters, Inc. Raymond Barnett, an employee of JOB construction, was severely injured on August 14, 1986 while he was working as a line puller on the project for JOB, when an Eagle helicopter pulling a sockline across the canyon came into contact with an energized Washington Water Power 115 kv electrical line.

Barnett ultimately sued Eagle Helicopters and R.W. Beck (who was contracted by BPA to provide inspection services under the contract) in the State Superior Court of Idaho. The jury returned a special verdict for Barnett and his wife that found Eagle Helicopters 40 percent liable, and JOB and BPA each 30 percent liable, even though neither JOB nor BPA were a party to the case. Judgment was entered against Eagle, who has appealed the case. Eagle filed an administrative tort claim against BPA based on the State Court Judgment, which was denied by BPA and resulted in this litigation.

2. Status of the Case

Complaint filed September 2, 1992. Additional pleadings pending.

EEO Cases

A. Marilyn Robinson v. Hazel O'Leary, U.S. District Court, Dist. of Oregon, Civ. No. 94-791JO. Action brought under the Civil Rights Act of 1964, as amended, and the Rehabilitation of Act of 1973 alleging discrimination based on race, color, sex, and physical handicap. Complaint seeks $1,350,000 in actual and compensatory damages, and costs.

B. Richard Raynor v. Bonneville Power Administration, U.S. District Court, Dist. of Oregon, Civ. No. 94-1133-FR. Action brought under contract and the Civil Rights Act of 1964, as amended, alleging violation of contract, and reprisal and discrimination based on involvement in protected EEO activity. Complaint seeks specific performance, injunctive relief, unspecified actual damages, $300,000 compensatory damages, and costs.

VII. Disposition of Previously Listed Litigation

A. Public Utility District No. 1 of Clark County, et al., v. Washington Public Power Supply System, et al., No. C93-5587 FDB (W. D. Wash.). On September 12, 1994, Plaintiffs filed a stipulated dismissal of this case, and it was dismissed without prejudice.

B. Benton County PUD v. United States, No. 590-82-C (Ct. Cl. filed November 18, 1982). This case was dismissed with prejudice on November 22, 1993.

C. United States v. Burlington Northern Railroad, U.S. District Court, No. CS-92-290-CI (E.D. Wash.). The case was settled for $318,000.

D. Datum Timing, Inc. and Bonneville Power Administration, United States General Accounting Office, File No. B-254493-1. Settled.

E. Guy F. Atkinson Company/Wright-Schuchart-Harbor v. Washington Public Power Supply System, No. 89-2-10883-6, King County Superior Ct., Washington. On June 1, 1991, the Superior Court Judge ruled from the bench that plaintiff was entitled to "set-off", or deduct an amount it owned to WNP-1 from an amount owed the plaintiff by WNP-4/5. The Supply System appealed the ruling to the Washington State Court of Appeals. Appellate proceedings were stayed by stipulation of the parties until May 4, 1993. The Supply System filed its initial appeal brief on August 23, 1993. Following submittal of its opening brief, the Supply System reached a settlement with AWSH.

F. M.G.I.C. Indemnity Corporation v. PUD No. 1 of Benton County, Washington, et al., No. C84-690, consolidated with MDL No. 551. M.G.I.C. voluntarily dismissed this case on August 12, 1994.

G. WPPSS v. J.A. Jones, Federal Dist. Ct. East. Dist. of Wash. (1991). J.A. Jones filed for summary judgment alleging that the statute of limitations bars the Supply System's claims. The Supply System also filed a motion for summary judgment alleging that J.A. Jones was in breach of contract when it failed to pay monies owing to WNP-3. On March 3, 1993, the court dismissed the Supply System's cause of action on procedural grounds.

H. Snohomish County Public Utility District No. 1 v. Bonneville Power Administration, (Petition for Review in the Ninth Circuit), No. 90-70257. On June 15, 1992, the Ninth Circuit dismissed each of Snohomish's remaining claims and affirmed Bonneville's entry into the settlement. On July 6, 1992, Snohomish filed petitions for rehearing of the dismissal with the Ninth Circuit which was denied on August 7, 1992. Snohomish did not seek review of the Ninth Circuit's decision by the United States Supreme Court.

I. PacificCorp, dba Pacific Power & Light, et al v. Washington Public Power Supply System, (Circuit Court of the State of Oregon for Multnomah County, Case No. A8910-06298). Dismissed.

J. Northwest Resource Information Center v. NMFS, 93-35488, et al. (9th Cir.). The Ninth Circuit held that under the Northwest Power Act it has exclusive original jurisdiction to review challenges to final agency action taken by BPA, regardless of whether the legal theory is grounded in alleged violation of the ESA. Case dismissed and District Court decision affirmed.

K. United States v. Roger E. Martin, et al., U. S. District Court, Oregon, No. 92-469RE, filed April 17, 1992. This case has been settled.

L. Gregory H. Bowers v. Hardy, No. 92-70639, filed 9/14/92. Petition for review was dismissed by 9th Circuit Court of Appeals.

M. Freë Lighting Corporation, Inc., a Massachusetts Corporation v. Bonneville Power Administration, Ninth Circuit Court of Appeals No. 94-70035. FLC's motion for voluntary dismissal was granted on May 25, 1994. BPA filed a Supplemental Statement of Costs on June 3, 1994, for the printing costs required to produce the Official Agency Record.

N. Chemical Bank v. PUD No. 1 of Benton County, Washington, et al., No. C83-1080 (W.D. Wash. filed August 3, 1983). This case has been dismissed.

O. Northwest Resource Information Center, et al. v. Pacific Northwest Electric Power and Conservation Council, 9th Cir. No. 92-70190, and consolidated cases. On September 9, 1994, the Ninth Circuit issued an opinion. The Court ruled against the Council and held that the amendments to the Council's Fish and Wildlife Program violated procedural requirements of section 4 of the Northwest Power Act. The Court found that the Council failed to explain the basis for its action and evaluate proposed program measures against sound biological objectives. In addition, there is extensive dicta in the opinion which suggests that greater actions should be taken in operation of the Federal Columbia River Power System for the protection of anadromous fish.

Southeastern Power Administration

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Operation and Maintenance, Southeastern Power Administration

For necessary expenses of operation and maintenance of power transmission facilities and of marketing electric power and energy pursuant to the provisions of section 5 of the Flood Control Act of 1944 (16 U.S.C. 825s), as applied to the southeastern power area, [$22,431,000] $19,843,000, to remain available until expended.

OVERVIEW

OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION

Southeastern Power Administration (Southeastern) markets the power produced at 23 hydroelectric projects located through the Southeast. The program is structured to:

- Encourage widespread use of available Federal power.

- Make the power available at the lowest possible rates to consumers consistent with sound business principles.

- Formulate power rates to recover all costs of producing and transmitting power, including amortization of capital investment allocated to power, over a 50-year period and replacements over their service lives which are less than 50 years.

- Give preference in the sale of power to public bodies and cooperatives.

- Utilize existing area transmission facilities to accomplish transmission of power to customers.

- Integrate projects to the maximum extent feasible and operate projects to provide maximum power contribution in meeting area power requirements.

- Encourage development of additional hydroelectric power projects that are economically and environmentally feasible.

Southeastern markets hydroelectric power, produced at Corps of Engineer-constructed projects, in the States of West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Illinois, and Kentucky; and, in accordance with the Flood Control Act of 1944, it gives preference in the sale of such power to public bodies and cooperatives.

Southeastern does not own or operate any transmission facilities. In the absence of transmission facilities of its own, Southeastern carries out its marketing program by utilizing the existing transmission systems of the power utilities in the area. This is accomplished through "wheeling" arrangements between Southeastern and each of the area utilities with transmission lines connected to the projects, under which the utility agrees to deliver specified amounts of Federal power to customers of the Government, and Southeastern agrees to compensate the utility for the wheeling services performed. Also, contracts were negotiated between Southeastern and most of the preference customers in Georgia, allowing a generation and transmission cooperative and an agency of municipal customers to transmit Southeastern's power to the preference customers. These customers compensate the utilities for the wheeling services performed.

Southeastern's power marketing policies for its respective systems anticipate that all available power, both capacity and energy, will ultimately be sold to preference customers with no sales to the non-preference utilities who provide wheeling services.

As part of the Administration's proposal to reinvent the Department of Energy, legislation will be proposed to privatize this power marketing activity. The Administration believes the purpose for the Federal Government developing and conducting these activities has been achieved and that these functions should now be performed by non-Federal entities. The proposal will provide customers protection against significant rate increases. A specific proposal for sale will be developed after active and careful consultation with Congress and other interested parties.

The major program activities Southeastern expects to perform in accomplishing its mission objectives include:

- Completing development of marketing plans, negotiation strategies, and contracts to integrate new resources into the system. Additionally, Southeastern has developed arrangements for the supply of pumping energy at Carters Project to preference customers within the

Georgia-Alabama-South Carolina System in accordance with Southeastern's published power marketing policy. Accomplishment of this initiative presents a unique and extremely complex situation involving several utility systems and numerous preference customers.

· Continuing to administer approximately 300 contracts which benefit more than 500 customers in a fair and effective manner that carries out the intent of contract provisions. This objective includes power delivery, contract service, billing and collection functions and daily coordination of reservoir operations to maximize power output and meet firm power commitments.

· Encouraging development of additional hydroelectric power projects that are economically and environmentally feasible. This initiative is consistent with the Energy Policy Act goals and Departmental policy to support development of renewable energy resources. In coordination with the Corps of Engineers, Southeastern is analyzing the financial feasibility of potential hydroelectric resources.

· Continuing to work with the Corps of Engineers and preference customers on proposed project updates and on new projects. Three projects in the Cumberland System are being evaluated for the installation of new and perhaps larger units and others for additional generating units.

· Receiving, reviewing and monitoring preference customer Integrated Resource Planning program submissions and implementation.

· Providing analysis, training and technical assistance in support of Southeastern's Energy Management and Renewable Energy program as required by the Energy Policy Act and other departmental initiatives among the 294 preference customers in the eleven-state Southeastern Region.

· Providing leadership in the Southeastern Region among states, local governments, allied industry groups, other Federal agencies, National Laboratories, environmental and consumer interest groups in reaching the regional goals of the Energy Policy Act, other relevant legislation and departmental regulations.

· Instructing customer's personnel in the latest conservation measures and approve of and assist the customers in their conservation programs.

· Meeting obligations to the environment and safety issues such as NEPA, Clean Air Act, Clean Water Act, and DOE Orders.

Southeastern formed a Quality Team to make recommendations concerning streamlining this administration. The mission statement was "to realistically portray Southeastern's Management Team relationships graphically" and the goal was "movement to a cluster organization." In connection with streamlining, Southeastern has proposed to change our organizational structure in accordance with the National Performance Review and the Department's "Rightsizing" program by reducing the number of managers/supervisors. We propose to change our current ratio of 1:3.4 to approximately 1:6.8 by the end of calendar year 1995 and eventually to approximately 1:11.13. This will be accomplished by eliminating layers of supervision within the functional areas.

Southeastern evaluates its program utilizing its Strategic Planning process by outlining its goals and objectives expected to be implemented during the next five years. As part of this evaluation process, Southeastern focuses on the Annual Report, total quality process improvement teams, partnerships with our customers and the Corps of Engineers, and the budget formulation process.

PERFORMANCE INDICATORS

The percent variance of actual from planned principal payments to Federal Investment is estimated to be zero (0).

The percent of full-time capacity commitments is estimated to be 100 percent.

The increase in transmission costs is expected to be less than the increase in the Consumer Price Index.

The increase in the average power costs is expected to be less than the increase in the Consumer Price Index.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Southeastern Power Administration					
Operation and Maintenance					
Operating Expenses	$ 3,217	$ 3,292	$ 0	$ 3,292	$ 3,472
Purchase Power and Wheeling					
Operating Expenses	$ 31,488	$ 27,249	$ 0	$ 27,249	$ 26,430
Subtotal, Southeastern Power Administration	$ 34,705	$ 30,541	$ 0	$ 30,541	$ 29,902
Subtotal, OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION	$ 34,705	$ 30,541	$ 0	$ 30,541	$ 29,902
Adjustment a/	-4,963	-8,110	0	-8,110	-10,059
TOTAL	$ 29,742	$ 22,431	$ 0	$ 22,431	$ 19,843
Summary					
Operating Expenses	$ 29,742	$ 22,431	$ 0	$ 22,431	$ 19,843
Total Program	$ 29,742	$ 22,431	$ 0	$ 22,431	$ 19,843
Staffing (FTEs)	41	41	0	41	41

Authorizations:
P.L. 78-534, "Flood Control Act of 1944"
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 102-486, "Energy Policy Act of 1992"

a/ Use of Prior year balances

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION

FY 1995 Appropriation	$ 30,541
- Adjustment -	0
FY 1995 Adjusted	$ 30,541
- Transfer -	0
FY 1995 Comparable	$ 30,541
Operation and Maintenance	
- Operation and Maintenance - Increase due to personnel support costs, equipment purchases, and contract services.	+180
Purchase Power and Wheeling	
- Purchase Power and Wheeling - Program showing a decrease due to the use of best estimates, based on recent power purchase experience for the Purchase Power and Wheeling activity.	-819
FY 1996 CONGRESSIONAL Budget Request	$ 29,902

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
SOUTHEASTERN POWER ADMINISTRATION					
Southeastern Power Administration	$ 34,705	$ 30,541	$ 0	$ 30,541	$ 29,902
TOTAL	$ 34,705	$ 30,541	$ 0	$ 30,541	$ 29,902

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOUTHEASTERN POWER ADMINISTRATION

I. Preface: Operation and Maintenance

The activity provides for: (1) scheduling the generation of power and supervision of power deliveries, (2) negotiation and administration of contracts for the sale of power and energy and establishment of rates to assure repayment of power costs, (3) general administration and support of Southeastern's power marketing program, and (4) Integrated Resource Planning program.

Key funding priorities:

- Be one of the electric power industry's premier marketers.
- Keep our rates as low as possible while repaying the Federal investment in a timely manner.
- Coordinate and cooperate with our partners to operate the projects in a manner that enhances the value and reliability of hydropower.
- Enhance the Federal Power Program by participating in upgrades or rehabilitation of existing hydroelectric projects and developing new projects.
- Integrate environmental concerns and determinations into agency actions.
- Foster sensitive, responsive, open communications.
- Integrate emerging energy efficiency technologies with power marketing strategies and programs.
- Implement best management practices.
- Improve the quality and efficiency of the associates' working environment.

II. A. Summary Table: Operation and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operation and Maintenance	$ 3,217	$ 3,292	$ 3,472	$ 180
Total, Operation and Maintenance	$ 3,217	$ 3,292	$ 3,472	$ 180

II. B. Laboratory and Facility Funding Table: Operation and Maintenance

Southeastern Power Administration	3,217	3,292	3,472	180

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II. B. Laboratory and Facility Funding Table: Operation and Maintenance

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Request	$ Change
Total, Operation and Maintenance	3,217	3,292	3,472	180

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Operation and Maintenance			
Operation and Maintenance	Continued the power marketing program in the Southeast. Continued negotiations to implement the Cumberland System Marketing Policy. Continued the reformulation of the marketing policy and negotiations for contracts in the Georgia-Alabama-South Carolina System. Continued the purchase of pumping energy, scheduling of the pumping energy, coordination between the providers of the pumping energy and the project, and accounting of all of the resulting transactions relative to the pumping operations at the Carters Project. Continued negotiations pertaining to the disposition of power from the pump units at the Richard B. Russell Project.	Continue the power marketing program in the Southeast. Complete any remaining negotiations to implement the Cumberland System Marketing Policy. Complete the marketing policy in the Georgia-Alabama-South Carolina System. Continue the purchase of pumping energy, scheduling of the pumping energy, coordination between the providers of the pumping energy and the project, and accounting of all of the resulting transactions relative to the pumping operations at the Carters Project. Complete negotiations pertaining to the disposition of power from the pump units at the Richard B. Russell Project.	Continue the power marketing program in the Southeast. Complete any remaining negotiations to implement the Cumberland System Marketing Policy. Complete negotiations for contracts in the Georgia-Alabama-South Carolina System. Continue the purchase of pumping energy, scheduling of the pumping energy, coordination between the providers of the pumping energy and the project, and accounting of all of the resulting transactions relative to the pumping operations at the Carters Project. Complete negotiations pertaining to the disposition of power from the pump units at the Richard B. Russell Project.

III. Operation and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operation and Maintenance (Cont'd)	Maintained power billing, collection, and payment functions for approximately 300 contracts which benefit more than 500 preference customers. Prepared financial and marketing analyses with respect to existing and potential projects. Coordinated power operations of 23 operating projects with Corps of Engineers Division and District offices and scheduling utilities, making determinations of capacity and energy availability weekly to arrive at quantities available to meet contractual commitments from the various projects. Performed continuing review of actual project operations to assure that computer simulations correspond to actual operating conditions and to ensure that the projects provide the optimum benefit to Southeastern customers and to the region, as well as serve other project functions.	Maintain power billing, collection, and payment functions for approximately 300 contracts which benefit more than 500 preference customers. Prepare financial and marketing analyses with respect to existing and potential projects. Coordinate power operations of 23 operating projects with Corps of Engineers Division and District offices and scheduling utilities, making determinations of capacity and energy availability weekly to arrive at quantities available to meet contractual commitments from the various projects. Perform continuing review of actual project operations to assure that computer simulations correspond to actual operating conditions and to ensure that the projects provide the optimum benefit to Southeastern customers and to the region, as well as serve other project functions.	Maintain power billing, collection, and payment functions for approximately 300 contracts which benefit more than 500 preference customers. Prepare financial and marketing analyses with respect to existing and potential projects. Coordinate power operations of 23 operating projects with Corps of Engineers Division and District offices and scheduling utilities, making determinations of capacity and energy availability weekly to arrive at quantities available to meet contractual commitments from the various projects. Perform continuing review of actual project operations to assure that computer simulations correspond to actual operating conditions and to ensure that the projects provide the optimum benefit to Southeastern customers and to the region, as well as serve other project functions.
	Prepared repayment analyses of each system to determine the rates required to achieve full appropriated debt repayment by the end of each system's repayment period and made a formal rate presentation for the Cumberland Basin Projects.	Prepare repayment analyses of each system to determine the rates required to achieve full appropriated debt repayment by the end of each system's repayment period and make a formal rate presentation for the Jim Woodruff Project.	Prepare repayment analyses of each system to determine the rates required to achieve full appropriated debt repayment by the end of each system's repayment period and make a formal rate presentation for the Kerr-Philpott Project.

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III. Operation and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operation and Maintenance (Cont'd)	Competing demands for water use continued to be intense and affected the power potential of projects for which Southeastern has marketing responsibility. The reallocation of water storage in reservoirs away from power in order to benefit other purposes continued to receive appropriate attention. Discussions, studies, and meetings with affected groups continued as Southeastern carried out its responsibility to ensure that the power interest was heard.	Competing demands for water use are expected to continue to be intense and to further impact power potential of projects for which Southeastern has marketing responsibility. Reallocation of water storage in reservoirs away from power in order to benefit other purposes will continue to receive appropriate attention. Discussions, studies, and meetings with affected groups will continue as Southeastern carries out its responsibility to ensure that the power interest is heard.	Competing demands for water use are expected to continue to be intense and to further impact power potential of projects for which Southeastern has marketing responsibility. Reallocation of water storage in reservoirs away from power in order to benefit other purposes will continue to receive appropriate attention. Discussions, studies, and meetings with affected groups will continue as Southeastern carries out its responsibility to ensure that the power interest is heard.
	Continued to analyze the financial feasibility of the potential hydroelectric resources in the ten Southeastern states within which Southeastern has marketing responsibility as well as selected projects outside the area for which Southeastern has been assigned responsibility. Continued studies, evaluations and discussions concerning replacement or upgrade of equipment at a number of existing projects in all four of Southeastern's marketing systems.	Analyze the financial feasibility of the potential hydroelectric resources in the ten Southeastern states within which Southeastern has marketing responsibility as well as selected projects outside the area for which Southeastern has been assigned responsibility. Continue studies, evaluations and discussions concerning replacement or upgrade of equipment at a number of existing projects in all four of Southeastern's marketing systems.	Analyze the financial feasibility of the potential hydroelectric resources in the ten Southeastern states within which Southeastern has marketing responsibility as well as selected projects outside the area for which Southeastern has been assigned responsibility. Continue studies, evaluations and discussions concerning replacement or upgrade of equipment at a number of existing projects in all four of Southeastern's marketing systems.
	Instruct customer's personnel in the latest conservation measures and approve of and assist the customers in their conservation programs.	Instruct customer's personnel in the latest conservation measures and approve of and assist the customers in their conservation programs.	Instruct customer's personnel in the latest conservation measures and approve of and assist the customers in their conservation programs.
	Continued to meet obligations to the environment and safety issues such as NEPA, Clean Air Act, Clean Water Act, and DOE Orders.	Meet obligations to the environment and safety issues such as NEPA, Clean Air Act, Clean Water Act, and DOE Orders.	Meet obligations to the environment and safety issues such as NEPA, Clean Air Act, Clean Water Act, and DOE Orders.
	41.0 FTE $ 3,217	41.0 FTE $ 3,292	41.0 FTE $ 3,472

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III. Operation and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operation and Maintenance	41.0 FTE $ 3,217	41.0 FTE $ 3,292	41.0 FTE $ 3,472

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHEASTERN POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOUTHEASTERN POWER ADMINISTRATION

I. Preface: Purchase Power and Wheeling

The activity provides for payment of amounts charged the Government under contractual arrangements for: (1) delivery of power over non-Federal systems to load centers of preference customers for the account of the Government, (2) purchase by the Government of energy to firm up Federally generated power during adverse water periods, and (3) support capacity required to meet commitments for the Jim Woodruff Project under adverse water conditions.

Trends: The Purchase Power and Wheeling activity is primarily dependent on the Federal Energy Regulatory Commission jurisdiction and is expected to increase due to rate increases caused by inflation.

Key funding priorities:

- Meet contractual commitments.
- Lead in arranging transmission of power and assisting others in planning and constructing transmission facilities where necessary.

II. A. Summary Table: Purchase Power and Wheeling

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Purchase Power and Wheeling.....	$ 31,488	$ 27,249	$ 26,430	$ -819
Total, Purchase Power and Wheeling	$ 31,488	$ 27,249	$ 26,430	$ -819

II. B. Laboratory and Facility Funding Table: Purchase Power and Wheeling

Southeastern Power Administration	31,488	27,249	26,430	-819
Total, Purchase Power and Wheeling	31,488	27,249	26,430	-819

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Purchase Power and Wheeling	Provided for payment of transmission service charges for delivery of power over non-Federal systems to load centers of preferred customers under contractual arrangements in place, and for purchase of energy to provide support capacity required to meet commitments for the Jim Woodruff project under adverse conditions.	Provide for payment of transmission service charges for delivery of power over non-Federal systems to load centers of preferred customers under contractual arrangements expected to be in place except under extreme drought conditions, and for purchase of energy to provide support capacity required to meet commitments for the Jim Woodruff project under adverse conditions.	Provide for payment of transmission service charges for delivery of power over non-Federal systems to load centers of preferred customers under contractual arrangements expected to be in place except under extreme drought conditions, and for purchase of energy to provide support capacity required to meet commitments for the Jim Woodruff project under adverse conditions.
	Purchased energy to pump water into the Carters Project for later release by the generators during peak load hours. This additional generation allowed the capacity at the project to be used.	Purchase energy to pump water into the Carters Project for later release by the generators during peak load hours. This additional generation will allow the capacity at the project to be used.	Purchase energy to pump water into the Carters Project, for later release by the generators during peak load hours. This additional generation will allow the capacity at the project to be used.
		Provide for environmental testing for the Richard B. Russell Project to test the pump-back units to determine if they are a detriment to fish. Funds for this testing are assumed to be available from FY 94 carry-over funds.	Provide for environmental testing for the Richard B. Russell Project to test the pump-back units to determine if they are a detriment to fish.
	$ 31,488	$ 27,249	$ 26,430
Purchase Power and Wheeling	$ 31,488	$ 27,249	$ 26,430

PENDING LITIGATION

SOUTHEASTERN POWER ADMINISTRATION

In Central Electric Power Cooperative, Inc., et al. vs. Southeastern Power Administration, et al., No. 3-91-2449-O (D.C.S.C.; filed August 15, 1991), six customers in South Carolina filed suit against Southeastern in U.S. District Court requesting the court to declare illegal Southeastern's energy surcharge contained in its 1990 approved rates for the Georgia-Alabama-South Carolina System, as applied to these customers. These six customers (five cooperatives and South Carolina Public Service Authority) had declined to participate in a voluntary short-term rate increase during 1989, while 168 other customers in the system participated in the voluntary rate increase earlier than allowed by their contracts. The short-term rate change was required to offset the effects of extensive droughts in the southeast and escalating Corps of Engineers operation and maintenance costs. The energy surcharge contained in those rates was to collect the portion of the costs not recovered from these six customers, and the costs were fully collected by September 1993. The parties have filed Motions for Summary Judgment which were argued in October 1992, and a ruling by the District Court is expected at any time.

Il
Ky
WV
Va
NC
Tn
Al
Ms
Ga
SC
Fl
Stonewall Jackson
Philpott
John H. Kerr
Wolf Creek
Laurel
Burkitt
Old Hickory
Dale Hollow
Cheatham
Cordell Hull
J. Percy Priest
Center Hill
Carters
Buford
Hartwell
Richard B. Russell
Allatoona
J. Strom Thurmond
West Point
Robert F. Henry
Walter F. George
Millers Ferry
Jim Woodruff
Service Area
SEPA Project
UNITED STATES
DEPARTMENT OF ENERGY
SOUTHEASTERN POWER ADMINISTRATION

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
POWER MARKETING ADMINISTRATION

REVENUES AND RECEIPTS
(Dollars in Thousands)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Southeastern Power Administration							
Gross Revenues Sale and transmission of electric energy	155,932	168,423	181,781	180,963	180,963	180,963	180,963
Net billing amount credited as an offsetting receipt	-8,826	-9,242	-11,575	-10,542	-10,555	-10,117	-10,117
Total Proprietary Receipts	146,496	159,181	170,206	170,421	170,408	170,846	170,846
Percent of sales to preference customers 1/	99%	99%	99%	99%	99%	99%	99%
Energy Sales from Power Marketed (billions of kilowatt hours)	7.5	7.5	7.5	7.5	7.5	7.5	7.5

1/ Includes TVA

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
SYSTEM STATISTICS

SOUTHEASTERN POWER ADMINISTRATION

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Generating capacity:			
Installed capacity (kw)	3,092,675	3,092,675	3,092,675
Peak capacity (kw)	3,390,000 1/	3,390,000	3,390,000
Generating stations:			
Generating projects (No.)	23	23	23
Available energy:			
Energy from streamflow	7,832,930	7,700,000	7,700,000
Energy from pumping	253,470	250,000	275,000
Energy purchased (mwh)	16,036	75,000	75,000
Energy available for Marketing (mwh)	8,102,436 2/	8,025,000 3/	8,050,000 3/

1/ Contracted capacity including reserves and losses.

2/ Gross amount; transmission losses of 215,209 mwh must be deducted from this quantity to get net energy (7,887,227 mwh) marketed to customers.

3/ Gross amount; transmission losses of approximately 250,000 mwh must be deducted from this quantity to get net energy marketed to customers.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET

POWER MARKETED, WHEELED, OR EXCHANGED BY PROJECT

Southeastern Power Administration

Project Power Marketed	State	Plants	Installed Capacity (KW)	FY 1994 Actual Power (GWH)	FY 1995 Estimated Power (GWH)	FY 1996 Estimated Power (GWH)
John H. Kerr	Va.-N.C.	1	204,000			
Philpott	Va.	1	14,000	499*	475*	475*
Allatoona	Ga.	1	74,000			
Buford	Ga.	1	86,000			
Carters	Ga.	1	500,000			
J. Strom Thurmond	Ga.-S.C.	1	280,000			
Walter F. George	Ga.-Ala.	1	130,000	3,229*	3,810*	3,835*
Hartwell	Ga.-S.C.	1	344,000			
R. F. Henry	Ala.	1	68,000			
Millers Ferry	Ala.	1	75,000			
West Point	Ga.-Ala.	1	73,375			
Richard B. Russell	Ga.-S.C.	1	300,000 a/			
Jim Woodruff	Fla.-Ga.	1	30,000	217	230	230
Barkley	Ky.	1	130,000			
Center Hill	Tenn.	1	135,000			
Cheatham	Tenn.	1	36,000			
Cordell Hull	Tenn.	1	100,000	3,942*	3,260*	3,260*
Dale Hollow	Tenn.	1	54,000			
Old Hickory	Tenn.	1	100,000			
J. Percy Priest	Tenn.	1	28,000			
Wolf Creek	Ky.	1	270,000			
Laurel	Ky.	1	61,000			
Stonewall Jackson	W. Va.	1	300	-	1	1
Total, power marketed		23	3,092,675	7,887	7,776	7,801

*Projects are integrated hydraulically, electrically, and financially for marketing purposes.

a/ Four pump-generators are scheduled to go into commercial operation in FY 1996, to give a total installed capacity of 600,000 KW.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
POWER MARKETING
SOUTHEASTERN POWER ADMINISTRATION - CONTINUING FUND

	FY 1995 Estimated Budget Authority	FY 1996 Estimated Budget Authority
Continuing Fund		
Emergency Expenses	...	...
Total, Continuing Fund	...	...

Authorization: 16 U.S.C. 825s-2

Continuing Fund

The Southeastern Power Administration Continuing Fund of $50,000, a permanent, indefinite special fund, maintained from receipts for the transmission and sale of electric power in the Southeastern area, is available to defray emergency expenses necessary to insure continuity of service.

Southwestern Power Administration

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Operation and Maintenance, Southwestern Power Administration

For necessary expenses of operation and maintenance of power transmission facilities and of marketing electric power and energy, and for construction and acquisition of transmission lines, substations and appurtenant facilities, and for administrative expenses, including official reception and representation expenses in an amount not to exceed $1,500 connected therewith, in carrying out the provisions of section 5 of the Flood Control Act of 1944 (16 U.S.C. 825s), as applied to the southwestern power area, [$21,316,000] $29,778,000, to remain available until expended; in addition, notwithstanding the provisions of 31 U.S.C. 3302, not to exceed [$3,935,000] $4,272,000 in reimbursements, to remain available until expended.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION

OVERVIEW

OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION

The primary mission of Southwestern Power Administration is to market and deliver Federal hydroelectric power, operate a reliable and safe transmission system, and encourage energy efficiency for the benefit of the region. All of this is accomplished by professional, courteous, customer-oriented people. The Southwestern Federal Power System encompasses 24 hydroelectric power plants operated by the U.S. Army Corps of Engineers and the marketing and delivery of power and energy from those plants by Southwestern. Southwestern sells this power at wholesale rates primarily to publicly and cooperatively owned electric utilities. Its contracts provide for periodic rate adjustments to ensure that the federal Government recovers all of its costs of operation and all capital invested in power, with interest, in keeping with statutory requirements of Section 5 of the Flood Control Act of 1944.

To integrate the operation of these hydroelectric generating plants and to transmit power from the dams to its customers, Southwestern maintains 2,220 kilometers (1,380 miles) of high-voltage transmission lines, 24 substations, and 4 microwave and VHF radio sites. Southwestern's headquarters is in Tulsa, Oklahoma; its dispatch center is in Springfield, Missouri; and its maintenance crews are based in Jonesboro, Arkansas; Gore and Tupelo, Oklahoma; and Springfield, Missouri. The map at the end of the overview depicts the approximate territory served by Southwestern and its customers.

As part of the Administration's proposal to reinvent the Department of Energy, legislation will be proposed to privatize this power marketing activity. The Administration believes the purpose for the Federal Government developing and conducting these activities has been achieved and that these functions should now be performed by non-Federal entities. The proposal will provide customers protection against significant rate increases. A specific proposal for sale will be developed after active and careful consultation with Congress and other interested parties.

The Southwestern program is divided into three activities: Operations and Maintenance, Construction, and Purchased Power and Wheeling. These activities are described in the respective prefaces of this document. In FY 1996, Southwestern's construction and maintenance program focuses on equipment replacement and upgrades rather than new starts. The Purchased Power and Wheeling program requests appropriations for its wheeling expenses and utilizes banked energy to meet energy purchase requirements during average water year conditions.

As in previous years this budget supports the performance of beneficial work for others activities that are performed on a fully reimbursable basis including costs associated with the use of facilities and staff resources.

Southwestern's FY 1996 budget request is driven by the following factors:

- The Secretary's Total Quality Management Initiative

- In FY 1994, Southwestern conducted an analysis of its budget formulation activities and concluded that a redescription of the Key Activity Summaries, particularly in Operations and Maintenance, was needed. By redescribing this activity, Southwestern is able to comply with the Secretary's Total Quality Management Initiative to submit a performance-based budget and be in a position to comply with the Government Performance and Results Act of 1993 (GPRA). The budget structure of Southwestern's program has not changed.

- The Department of Energy's Strategic Plan

- As part of a comprehensive strategic planning process, the Department of Energy is aligning and integrating its business activities across departmental lines. This strategy has helped shape the FY 1996 budget and will have a critical role in shaping future budget requests. As an

important element in the Department's Energy Resources business, Southwestern's budgeting process is structured to support the Department's Strategic Plan for achieving maximum operational efficiency and service to its customers.

- Growing Demands on the Power System

- As Southwestern moves to the year 2000, greater flexibility in its funding processes is needed to meet anticipated customer needs. Technological advances have forced Southwestern into the arena of a "responsible utility" where it is mandated by law to provide a variety of services and meet legal requirements. Laws, such as the National Energy Policy Act of 1992 which requires open access to transmission systems, are likely to affect significant changes in Southwestern's operations and priorities in the remaining years of the twentieth century.

-In addition, customers and interconnected utilities have expressed an increased interest in developing and upgrading facilities through cooperative efforts to permit greater use of Southwestern's transmission system. In order to meet these growing requirements, Southwestern proposes to make greater use of alternative methods of financing, such as net billing, reimbursable authority, bill crediting, and nonappropriation transfer.

- Streamlining and Restructuring Initiatives

-In support of the National Performance Review (NPR) recommendations, Southwestern reorganized in FY 1994 to reduce its management layers. Further efforts in FY 1995 are expected to result in an employee to supervisor ratio of 10:1. Southwestern analyzed the impact of reducing administrative positions proposed by the NPR. However, many of these positions directly support the program. Southwestern can support some reductions in those positions that are not directly supporting the program. Southwestern will continue to review proposed reductions in future years. If realized, these reductions will be achieved through attrition and restructuring of activities.

FY 1996 Performance Measurements

Southwestern's performance measurements reflect a utility business operation and measure the entire program. These measurements are consistent with the Department of Energy's Strategic Plan in meeting future energy needs. As a program in the Department's Energy Resources business, Southwestern is working with other utilities in the southwest region to use optimal technology to promote energy efficiency, preserve the environment, ensure the health and safety of employees and the general public, develop cost-effective and reliable operations, while repaying the Federal investment in power facilities on schedule. The following measurements have been developed in the areas of marketing, repayment, safety, competitiveness, and reliability.

Outputs

- Market and deliver all available Federal hydroelectric power.

- This measure compares Federal hydropower and energy marketed to total hydropower and energy available. This is an overall measure of the effectiveness of the marketing program in meeting its statutory obligations.

- Cumulative principal payments as a percent of total Federal investment.

- This measure represents the relationship between the cumulative amount of principal paid to date and the total Federal investment to be repaid. While analysis of this output does not necessarily provide conclusive information without further analysis of additional factors such as the average age of the system, relative interest rates, and contractual commitments, the measure nevertheless provides information on the continual progress toward the repayment of the total investment.

- System lost time injury frequency compared to the industry average.

· This measure represents a ratio of all work-related injuries which result in loss of consciousness, restrictions of work or motion, transfer to another job, or medical treatment beyond first aid compared to the total manhours worked. This measure was established by the Bureau of Labor Statistics.

· Change in operating costs compared to changes in the Consumer Price Index.

· This measure represents the relationship of change in operating costs as compared to change in the Consumer Price Index. This measure provides information to evaluate variations in operating costs as they relate to inflationary trends in the economy. While this indicator can monitor changes in operating costs as related to national inflation, other factors can also have significant impact on costs, such as, hydrologic conditions and age of facilities.

· Generation system performance compared to North American Electric Reliability Council (NERC) criteria.

· NERC standards measure how well a system performs in matching generation with its load obligation. One day each month is selected to be surveyed; each system measures and reports its performance for all hours of that day. A running average is computed for the current month's "score" and each of the eleven preceding months. The minimum satisfactory performance level is 90 percent.

Outcomes

· Southwestern markets all available U.S Army Corps of Engineers hydroelectric power and energy in its region.

· Southwestern meets its ongoing requirements for repayment of investment.

· Southwestern operates a safe and reliable transmission system.

· Containment of operating costs and quality job processes result in lowest possible rates.

· Southwestern is proven and recognized as a highly reliable deliverer of hydroelectric power.

Program Evaluation

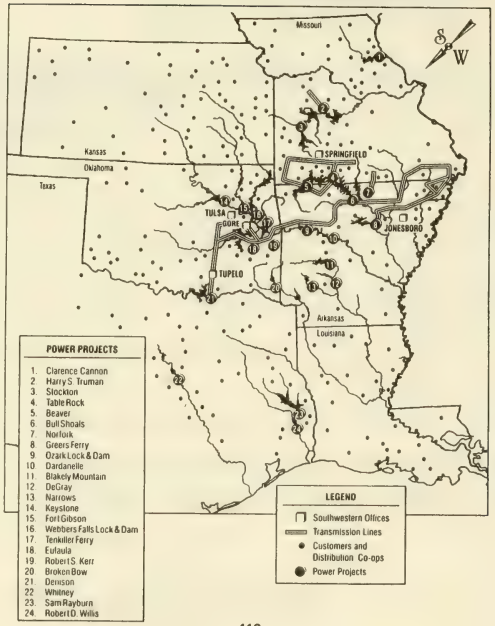
· Through employee and customer involvement, Southwestern issued its Strategic Plan in March, 1991. In developing the plan, strengths and weaknesses of the program were appraised and key objectives were identified to address strategic issues facing Southwestern as it moves toward the 21st century. In April 1994, the plan was evaluated and accomplishments were reported. How well we do as an electric utility is largely based on customer evaluation of our product and service. Southwestern constantly receives customer feedback through customer surveys, joint work groups, participation in conferences and professional associations, and our Annual Customer Conference. This year Southwestern plans to conduct an extensive customer survey to further assess our improvement efforts as well the future direction of our business practices.

Other Funding Methods

· Southwestern is requesting $4,272,000 in reimbursable authority. This initiative reduces Southwestern's need for new appropriations, while encouraging initiatives to enhance regional transmission system capacity and reliability and to respond to emergency requests for assistance from customers.

· Prior year funds of $514,482 are included in Southwestern's total program request of $30,292,000.

Department of Energy
Transmission System Map (PMA)
Southwestern Power Administration



DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

SOUTHWESTERN POWER ADMINISTRATION

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operations and Maintenance					
Operating Expenses	$ 21,563 a/	$ 19,539	$ 0	$ 19,539	$ 20,897
Purchased Power and Wheeling					
Operating Expenses	$ 1,650	$ 1,503	$ 0	$ 1,503	$ 1,464
Construction					
Operating Expenses	$ 11,138	$ 9,514	$ 0	$ 9,514	$ 7,931
Subtotal, SOUTHWESTERN POWER ADMINISTRATION	$ 34,351	$ 30,556	$ 0	$ 30,556	$ 30,292
Adjustment	-764 b/	-9,240	0	-9,240	-514 c/
TOTAL	$ 33,587	$ 21,316	$ 0	$ 21,316	$ 29,778
Summary					
Operating Expenses	$ 33,587	$ 21,316	$ 0	$ 21,316	$ 29,778
Total Program	$ 33,587	$ 21,316	$ 0	$ 21,316	$ 29,778
Staffing (FTEs)	200 d/	196 d/	0	196	195 d/

Authorizations:
P.L. 78-534, "Flood Control Act of 1944"
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 102-486, "Energy Policy Act of 1992"

a/ $277 reserved for FY 1995 Operations and Maintenance requirements.
b/ Prior year funds for Purchased Power and Wheeling requirements.
c/ Includes prior year funds in the amount of $514: $215 in Construction, $245 in Purchased Power and Wheeling, and $54 in Operations and Maintenance.
d/ Includes Special Program Full-Time-Equivalent positions.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

SOUTHWESTERN POWER ADMINISTRATION

FY 1995 Appropriation	$ 30,556
- Adjustment -	0
FY 1995 Adjusted	$ 30,556
- Transfer -	0
FY 1995 Comparable	$ 30,556
Operations and Maintenance	
- Operations and Maintenance - Increased requirement in Operations and Maintenance is due to Southwestern's efforts to focus on maintaining its aging transmission system to preserve required utility reliability.	+1,358
Purchased Power and Wheeling	
- Other Contractual Requirements - Reflects an increase in reimbursable authority as listed below and a decrease of $39,000 in contractual requirements.	+298
- Reimbursable Authority - The higher request for reimbursable authority is due to changes in contractual arrangements that increased Southwestern's energy commitments.	-337
Construction	
- Transmission System Replacements - Increase in the area of transmission system replacements is due to Southwestern's efforts to focus on maintaining its aging transmission system to preserve required utility reliability.	+722
- Transmission System Improvements - Decrease in the area of transmission system improvements is the result of a change in focus to maintain the transmission system and the absence of a joint participation activity.	-2,083
- Capital Equipment Not Related to Construction - Decrease in the capital equipment area is due to higher than normal replacement efforts that were required to meet DOE and GSA replacement guidelines in previous Budget years.	-222
FY 1996 CONGRESSIONAL Budget Request	$ 30,292

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOUTHWESTERN POWER ADMINISTRATION

I. Preface: Operations and Maintenance

Program Description

Southwestern's Operations and Maintenance activity is designed to fulfill the requirements of Section 5 of the Flood Control Act of 1944 in regard to marketing and delivering Federally generated hydroelectric power and recovering the Federal power system investment, including interest, and is committed to providing reliable service and cost-based energy in a safe, efficient, and cost-effective manner. This program provides for approximately 195 Full-Time-Equivalents working in the areas of power marketing; transmission system engineering, operation and delivery; environment, safety, and health; routine transmission system maintenance; and general program management. Program activities include negotiation and administration of power marketing contracts for sale of power and associated services; development of wholesale power rates; development and implementation of operational arrangements with competing water users; technical and economic studies for general transmission and generation resource planning; energy efficiency activities; scheduling and delivery of power and associated energy to preference customers; an environment, safety, and health program; systematic maintenance and improvement of the transmission system and related activities; and administration and management of the Southwestern program. In addition to appropriated funds, Southwestern will also use alternative financing methods such as reimbursable authority, net billing, bill crediting, and non-appropriation transfer to provide reliable, uninterrupted service to its customers.

Trends

- Since the 1980s, Southwestern's marketing area has experienced explosive growth in the water-based recreation and tourism industry, increased demand for raw water supply sources, and an increased public interest in protection of the natural environment. Supporters of those interests are increasingly vocal and have strong local, state, and national political support. The Corps of Engineers' lakes, where hydropower is a Congressionally authorized project purpose, are the primary existing water resources that could meet the changing needs in the region. Southwestern is finding it increasingly difficult to accommodate the competing use requests for operational change and meet Federal contracts for power and energy.

- Southwestern has made significant advances in its status of repayment in the last few years compared to estimates based on average water year conditions. The FY 1993 estimated cumulative status of repayment was $279,363,749; whereas, the actual FY 1993 cumulative status of repayment was $297,683,934, reflecting an increase in repayment status of $18,320,185.

- Southwestern's rate adjustments are expected to stay within the rate of inflation through FY 1996. However, the marginal difference between Southwestern's rates for wholesale hydroelectric power and those rates for similar services of private utilities within Southwestern's marketing area is narrowing.

- Southwestern is moving into the arena of "responsible utility" where it is required by law to provide a variety of services and meet legal requirements. Laws, such as the National Energy Policy Act of 1992 which requires open access to transmission systems, are likely to affect Southwestern's operations and priorities in the remaining years of this century.

- As funding becomes more stringent and the demand for additional services are placed on Southwestern by customers and interconnected utilities to develop and upgrade facilities to permit greater use of Southwestern's transmission system, Southwestern will need greater flexibility in its funding methods in order to meet its legal requirements and its responsibilities as a member of the interconnected southwestern power system. The

I. Operations and Maintenance (Cont'd)

use of alternative methods of financing, such as reimbursable authority, net billing, bill crediting and non-appropriations transfer, will increase.

Key Funding Priorities

- Market and deliver all Federal hydroelectric power under contract through a reliable and safe transmission system.

- Improve transmission system quality and reduce long-term operating costs through a scheduled program of preventive maintenance.

- Manage hydroelectric power resources and design and operate the transmission system to meet contractual obligations, and provide increased economic benefits to the region through integrated resource planning and coordinated operations with preference customers and other regional utilities.

- Recover costs sufficient to maintain an acceptable level of repayment of the Federal investment.

- Provide a safe and healthy environment for Southwestern employees and the general public.

- Maintain a customer-focused, team-oriented, diverse, and well-trained work force to provide for the administration and management of Southwestern's power marketing program.

Other Funding Methods

- The total reimbursable authority request of $4,272,000 includes $400,000 for Operations and Maintenance activities.

- Prior year funds in the amount of $53,718 are included in the total Operations and Maintenance request.

II. A. Summary Table: Operations and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operations and Maintenance	$ 21,963	$ 19,939	$ 21,297	$ 1,358
Reimbursable Authority	-400	-400	-400	0
Total, Operations and Maintenance	$ 21,563	$ 19,539	$ 20,897	$ 1,358

II. B. Laboratory and Facility Funding Table: Operations and Maintenance

All Other	$ 21,563	$ 19,539	$ 20,897	$ 1,358
Total, Operations and Maintenance	$ 21,563	$ 19,539	$ 20,897	$ 1,358

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Operations and Maintenance			
Operations and Maintenance	Marketed power and energy from 24 Corps hydroelectric plants at cost-based rates consistent with sound business principles, giving preference in the sale to public bodies and cooperatives. Encouraged Integrated Resource Planning and energy efficiency activities by preference utilities. Formulated and negotiated new power marketing and energy exchange arrangements which resulted in increased power sales revenues, significant savings in Southwestern's program costs, and improved joint operational efficiency. Formulated and negotiated operational arrangements with other water resource interests whose needs compete with hydroelectric power for use of reservoir storage in the projects from which Southwestern markets power. This was necessary to reduce or avoid the adverse impacts of such competitive uses on hydroelectric power and energy production, and an adverse impact on sales and revenues available to the Government.	Continue to market power and energy from 24 Corps hydroelectric plants at cost-based rates consistent with sound business principles, giving preference in the sale to public bodies and cooperatives. Continue to encourage Integrated Resource Planning and energy efficiency activities by preference utilities. Continue to formulate and negotiate new power marketing and energy exchange arrangements to result in increased power sales revenues, significant savings in Southwestern's program costs, and improved joint operational efficiency. Continue to formulate and negotiate operational arrangements with other water resource interests whose needs compete with hydroelectric power for use of reservoir storage in the projects from which Southwestern markets power. This is necessary to reduce or avoid the adverse impacts of such competitive uses on hydroelectric power and energy production, and an adverse impact on sales and revenues available to the Government.	Provide for ongoing power marketing, transmission and generation resource planning, engineering, energy efficiency services, and rates analysis activities; specifically: Formulate and negotiate contracts for marketing all available Federal hydropower with associated energy and services. Encourage Integrated Resource Planning and energy efficiency activities in customer utilities by transferring technological information through the Resource Planning Guide and seminars. Formulate and negotiate operational arrangements with other water resource interests whose needs compete with hydroelectric power for use of reservoir storage in the projects from which Southwestern markets power. Conduct planning and evaluation studies and economic and rate impact studies related to issues and alternatives that could adversely impact or optimize the operation of Southwestern's hydroelectric power resources. Conduct annual rate and repayment studies to determine the adequacy of Southwestern's rates to recover costs related to repayment of the Federal investment in hydroelectric generation and transmission facilities. Participate in regional joint power system planning activities to develop jointly funded transmission projects for more efficient, reliable operations. Provide general engineering support to the marketing program. Perform pre-project planning and engineering to support the Construction program, including communications, transmission lines, substations, and related components.
	Provided Administrative oversight of the Southwestern Mission. (200 FTE)	Continue to provide administrative oversight of the Southwestern Mission. (196 FTE)	
	Managed the renewable hydroelectric power resources to optimize outputs and meet contractual commitments. Conducted numerous technical and economic studies required to provide data to analyze and evaluate the impacts of a significantly increasing number of proposed operational changes or hydroelectric power storage reallocations and addressed growing concerns of other	Continue to manage the renewable hydroelectric power resources to optimize outputs to meet contractual commitments. Continue to conduct technical and economic studies required to provide data to analyze and evaluate the impacts of proposed operational changes or hydroelectric power storage reallocations. Continue to conduct a reduced number of studies to address	

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III. Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operations and Maintenance (Cont'd)	interests regarding the adverse environmental impacts of hydroelectric power operations. Formulated and developed new alternative arrangements to more optimally operate the existing Federal hydroelectric power projects such as integrating thermal-electric and hydroelectric power operations or fully interconnecting and integrating operation of the existing hydroelectric power projects. Developed new arrangements to avoid the risk of losing operational flexibility and/or marketable capacity and energy production which would cause Southwestern to be unable to meet contractual commitments and to minimize the loss of hydroelectric power benefits and limit the loss of revenues to the Government.	concerns voiced by other interests regarding the adverse environmental impacts of hydroelectric power operations at specific projects. Continue to conduct preliminary evaluations of the feasibility of new alternative arrangements to more optimally operate the existing Federal hydroelectric power projects such as integrating thermal-electric and hydroelectric power operations or fully interconnecting and integrating operation of the existing hydroelectric power projects. Continue to develop new arrangements to avoid the risk of losing operational flexibility and/or marketable capacity and energy production which would cause Southwestern to be unable to meet contractual commitments and to minimize the loss of hydroelectric power benefits and limit the loss of revenues to the Government.	Through power marketing contracts with our customers, make use of alternative financing methods such as net billing, bill crediting, non-appropriation transfer, and reimbursable authority, to minimize the need for appropriations, and provide reliable, uninterrupted service to our customers, and meet growing demands on the power system from both legal and load requirements.
	Scheduled and operated the transmission system in a safe and reliable manner consistent with the requirements of the regional utility reliability council. Implemented significant increases in the Environmental, Safety, and Health program to meet DOE and other Federal requirements legislated under NEPA, TSCA, RCRA, CERCLA, Clean Air and Clean Water Acts, OSHA, and others.	Continue to schedule and operate the transmission system in a safe and reliable manner consistent with the requirements of the regional utility reliability council. Continue to implement Environmental, Safety, and Health program to satisfy DOE and other Federal requirements legislated under NEPA, TSCA, RCRA, CERCLA, Clean Air and Clean Water Acts, OSHA, and others.	Provide for the scheduling and operation of the power system, and power billing and collections activities; specifically: Schedule the delivery of power to customers and the integration of Southwestern's hydro with other power resources. Operate the transmission system in a safe and reliable manner consistent with the standards of the regional utility reliability council. Perform accounting and invoicing for power system transactions. Manage the renewable hydroelectric power resources to optimize outputs to meet contractual commitments. Conduct technical and economic studies required to provide data to analyze and evaluate the impacts of proposed operational changes and hydroelectric power storage reallocation. Provide general engineering support to operate the transmission system.
	Marketed power to preference customers at rates which maintains an acceptable level of repayment.	Continue to market power to preference customers at rates which maintain an acceptable level of repayment.	Provide for an Environment, Safety, and Health (ES&H) program to satisfy DOE and other Federal requirements legislated under various rules and regulations. Conduct environmental evaluations and assessment activities, a safety and health program for all employees, and a security and emergency management program.
	Maintained transmission system which covers 1,380 miles in three states. Serviced transmission lines for structure crossarm breakage due to deterioration. Serviced protective equipment such as power circuit	Continue to maintain transmission system which covers 2,225 kilometers in three states. Continue to service transmission lines for structure crossarm breakage due to deterioration. Continue to service protective	

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III. Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operations and Maintenance (Cont'd)	breakers, transformers, etc., on a routine basis and after an occurrence of lightning strikes. Acquired services for the clearing of right-of-way. Implemented changes in equipment maintenance to include more comprehensive inspections to comply with new environmental requirements for spill prevention and disposal of hazardous waste. These requirements effectively doubled existing inspection requirements. Implemented changes in the disposal of wood products classified as hazardous waste. Transported wood products to Environmental Protection Agency approved disposal sites for incineration in order to comply with Environmental Protection Agency requirements. Further improved efficiency of operations, enhanced productivity, and managed an efficient maintenance program to increase system reliability. Implemented emergency preparedness measures. Maintained an ongoing program of transmission system facilities replacement and modernization to reduce unplanned outages, lower maintenance costs, and improve operating efficiency. Assured system enhancements to meet continuing load growth and reliability requirements. Began installation of the new SCADA system, including significant overtime and material expenses that were not a part of construction activities to make the system	equipment such as power circuit breakers, transformers, etc. on a routine basis and after an occurrence of lightning strikes. Continue to acquire services for the clearing of right-of-way. Continue to implement changes in equipment maintenance to include more comprehensive inspections to comply with new environmental requirements for spill prevention and disposal of hazardous waste. Continue to implement changes in the disposal of wood products classified as hazardous waste. Continue to transport wood products to Environmental Protection Agency approved disposal sites for incineration in order to comply with anticipated Environmental Protection Agency requirements. Continue to further improve efficiency of operations, enhance productivity, and manage an efficient maintenance program to increase system reliability. Continue to implement emergency preparedness measures. Continue to maintain an ongoing program of transmission system facilities replacement and modernization to reduce unplanned outages, lower maintenance costs, and improve operating efficiency. Continue to assure system enhancements to meet continuing load growth and reliability requirements. Continue to conduct additional installation activities related to the new Supervisory Control and Data Acquisition system, including	Provide for day-to-day maintenance of Southwestern's communication facilities and 2,220 kilometers (1,380 miles) of service transmission system; specifically: Service transmission lines for structural crossarm breakage, pole replacements, and substation equipment such as power circuit breakers, transformers, etc. Implement agency programs for disposal of polychlorinated biphenyl (PCB) materials and other hazardous wastes, spill prevention and control, general environmental awareness and training, comprehensive environmental inspections of field facilities, and for maintaining compliance with applicable environmental policies and regulations. Implement a Field Safety Program. Engineer, implement, and administer an ongoing program of transmission system facilities replacement and modernization to reduce unplanned outages, lower maintenance costs, and improve operating efficiency. Design and implement transmission system communication improvements to eliminate power line carriers used for voice, data, and control to improve system reliability. Participate in the installation of system enhancement activities that are not part of the construction activity. The Operations and Maintenance Budget increase is due to a continued focus on routine maintenance of the transmission system to ensure responsible and reliable service. Provide for administration and management activities, such as the financial, procurement, human resources, and administrative support functions required to accomplish Southwestern mission requirements, specifically: Implement the Chief

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III. Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operations and Maintenance (Cont'd)	operational. Implemented communication system improvements to eliminate power line carriers used for voice, data, and control to improve system reliability. Participated in regional joint power system planning activities to develop more efficient, reliable operations and jointly funded transmission projects, rather than full Federal funding.	significant overtime and material expenses that are not a part of construction activities to make the system operational. Continue to implement communication system improvements to eliminate power line carriers used for voice, data, and control to improve system reliability. Continue to participate in regional joint power system planning activities to develop more efficient, reliable operations and jointly funded transmission projects, rather than full Federal funding.	Financial Officers Act requirements, the Government Performance and Results Act of 1993 requirements, and a consolidated power marketing financial accounting system. Provide data processing support, including support for the supervisory control and data acquisition/energy management system (SCADA/EMS). Continue implementation of a telecommunications program system at all locations. Provide acquisition support in acquiring land, materials, devices, and equipment necessary to support Southwestern's programs. Provide the full range of personnel services and advice and assistance to Southwestern managers to ensure consistency with the Department's Total Quality Management initiative to maintain a customer-oriented, team-focused, diverse, and well-trained workforce. (195 FTE)
	Provided the financial, procurement and administrative support needed to accomplish the Southwestern Mission requirements. Implemented requirements of the Chief Financial Officers Act of 1990.	Continue to provide the financial, procurement, and administrative support needed to accomplish the Southwestern Mission requirements. Continue to implement requirements of Chief Financial Officers Act of 1990. The FY 1995 funding level reflects an effort to reduce administrative costs.	
	Provided operation and maintenance funding required to support the needs of preference customers.	Continue to provide operation and maintenance funding required to support the needs of preference customers.	
		Unobligated balances from FY 1993 Purchased Power and Wheeling funds ($1,930) and Operation and Maintenance funds ($626) will be used to fund FY 1995 Operation and Maintenance requirements. In addition, FY 1994 Operations and Maintenance funds ($277) will be used for FY 1995 requirements.	Unobligated balances from FY 1994 ($54) will be used to fund Operations and Maintenance requirements.
	Non-Federal ($200) Federal ($200)	Non-Federal ($200) Federal ($200)	Non-Federal ($200) Federal ($200)
	200.0 FTE $ 21,963	196.0 FTE $ 19,939	195.0 FTE $ 21,297

III. Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Reimbursable Authority	-$ 400	-$ 400	-$ 400
Operations and Maintenance	200.0 FTE $ 21,563	196.0 FTE $ 19,539	195.0 FTE $ 20,897

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOUTHWESTERN POWER ADMINISTRATION

I. Preface: Purchased Power and Wheeling

Program Description

Southwestern's Purchased Power and Wheeling activity is designed to implement the requirements of Section 5 of the Flood Control Act of 1944, in regard to marketing Federally generated hydroelectric power and making such power available to preference customers in wholesale quantities. The hydro energy marketed by Southwestern must be supplemented by energy purchases to assure Southwestern's commitments under sales contracts with its utility customers. Southwestern also has other contractual arrangements to deliver power and energy to customers not directly connected to the transmission system and to pay resulting transmission and wheeling expenses. In addition to appropriated funds, Southwestern will also use reimbursable authority, banked energy, net billing, bill crediting, and non-appropriation transfer to provide for energy deliveries to Southwestern customers.

Trends

- Due to several consecutive years of above average rainfall in Southwestern's marketing area, Southwestern has been able to reduce short-term Purchased Power and Wheeling budget requests by banking energy for future power needs. However, depending on water conditions in the next few years and the use of energy banks, the Purchased Power and Wheeling budget may require a higher funding level in the outyears.

- Customer demand is increasing for transmission services as a result of the open transmission access provisions of the National Energy Policy Act of 1992.

Key Funding Priorities

- Meet power and energy commitments under power sales contracts.

- Rely on banked energy to meet average year direct purchased power requirements.

- Retain reimbursable authority in two areas, military customers and Oklahoma municipal customers, to maintain lower purchased power and wheeling funding requests.

- Provide for contracted power and energy delivery services while continuing to provide for reimbursable authority by modifying contractual arrangements, where possible, to require Oklahoma municipal and military customers to compensate investor-owned utilities directly for energy deliveries.

Other Funding Methods

- The total reimbursable authority of $4,272,000 includes $1,722,000 for Purchased Power and Wheeling activities.

- Prior year funds in the amount of $245,163 are included in the total Purchased Power and Wheeling request.

II. A. Summary Table: Purchased Power and Wheeling

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
System Support Requirements	$ 0	$ 0	$ 0	$ 0
Other Contractual Requirements	5,683	2,888	3,186	298
Reimbursable Authority	-4,033	-1,385	-1,722	-337
Total, Purchased Power and Wheeling	$ 1,650	$ 1,503	$ 1,464	$ -39

II. B. Laboratory and Facility Funding Table: Purchased Power and Wheeling

All Other	$ 1,650	$ 1,503	$ 1,464	$ -39
Total, Purchased Power and Wheeling	$ 1,650	$ 1,503	$ 1,464	$ -39

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Purchased Power and Wheeling			
System Support Requirements	Purchased non-discretionary energy to supplement hydro generation to meet system contractual obligations for average water conditions. Amounts reflect the use of banked energy and/or the continuing fund to meet any and all required purchases.	Continue to purchase non-discretionary energy as necessary to supplement hydro generation to meet system contractual obligations for average water conditions. Continue to use banked energy to meet average year purchase requirements and to use the continuing fund to meet above average purchase power requirements.	Purchase non-discretionary energy as necessary to supplement hydro generation to meet system contractual obligations for average water conditions. Use of banked energy will meet average year purchase requirements while the continuing fund will meet above average purchased power requirements.
	$ 0	$ 0	$ 0

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III. Purchased Power and Wheeling (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Contractual Requirements	Paid for wheeling expenses and power and energy delivered to customers not directly connected to Southwestern's transmission system under contractual arrangements with other suppliers. Amounts reflect the higher price of transmitting power. ($1650)	Continue to pay for wheeling expenses and power and energy delivered to customers not directly connected to Southwestern's transmission system through contractual arrangements with other suppliers. Decreased amounts reflect the level of funding needed to meet lowest expected level of wheeling obligations to deliver power and energy to these customers. ($1,503)	Pay for wheeling expenses and power and energy delivered to customers not directly connected to Southwestern's transmission system through contractual arrangements with other suppliers. Decrease reflects contractual arrangements that adjusted the level of funding needed to meet lowest expected level of wheeling obligations to deliver power and energy to these customers. ($1,464)
	Contractual arrangements included costs for purchased energy sold to two Government Agencies, Ft. Sill and McAlester Army Ammunition Plant, for which Southwestern and the two agencies had to request appropriations. Reimbursable authority was needed to eliminate duplicate appropriations. DOD-Federal ($3,972)	Contractual arrangements include costs for purchased energy sold to two Government Agencies, Ft. Sill and McAlester Army Ammunition Plant for which all three agencies had to request appropriations. Reimbursable authority is needed to eliminate duplicate appropriations. Decreased amount reflects contractual changes that reduced Southwestern's energy commitments to some customers. DOD-Federal ($1,349)	Contractual arrangements include costs for purchased energy sold to two Government Agencies, Ft. Sill and McAlester Army Ammunition Plant for which all three agencies had to request appropriations. Reimbursable authority is needed to eliminate duplicate appropriations. Increase reflects the higher unit price of purchased power. DOD-Federal ($1,687)
	Contractual arrangements included costs for purchased energy sold to an Oklahoma municipal customer for which Southwestern requests appropriations and for which the customer directly reimburses Southwestern. Reimbursable authority was requested to eliminate the need for appropriations. Non-Federal ($61)	Contractual arrangements include costs for purchased energy sold to an Oklahoma municipal customer for which Southwestern requests appropriations and for which the customer directly reimburses Southwestern. Reimbursable authority will be requested to eliminate the need for appropriations. Decreased amounts reflect contractual changes that reduced Southwestern's energy commitments to some customers. Non-Federal ($36)	Contractual arrangements include costs for purchased energy sold to an Oklahoma municipal customer for which Southwestern requests appropriations and for which the customer directly reimburses Southwestern. Reimbursable authority is requested to eliminate the need for appropriations. Decrease reflects contractual adjustments that reduced Southwestern's energy commitments to some customers. Non-Federal ($35)
	Provided Purchased Power & Wheeling funding required under contractual arrangements with preference customers.	Continue to provide Purchased Power & Wheeling funding required under contractual arrangements with preference customers.	Provide Purchased Power & Wheeling funding required under contractual arrangements with preference customers.
	Unobligated balances from FY 1992 ($764) was used to fund FY 1994	Unobligated balances from FY 1993 ($1,000) will be used to fund FY 1995	Unobligated balances from FY 1994 ($245) will be used to fund Purchased

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III. Purchased Power and Wheeling (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other Contractual Requirements (Cont'd)	requirements.	Purchased Power and Wheeling requirements.	Power and Wheeling requirements.
	$ 5,683	$ 2,888	$ 3,186
Reimbursable Authority	-$ 4,033	-$ 1,385	-$ 1,722
Purchased Power and Wheeling	$ 1,650	$ 1,503	$ 1,464

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OPERATION & MAINTENANCE, SOUTHWESTERN POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

SOUTHWESTERN POWER ADMINISTRATION

I. Preface: Construction

Program Description

Southwestern's Construction activities are designed to implement the statutory requirements of Section 5 of the Flood Control Act of 1944 in regard to marketing Federally generated hydroelectric power and making such power available to area utilities. This activity provides for the construction, modification, and replacement of transmission, substation, switching, and communication facilities. As an integral part of the electric utility community in the region, Southwestern is obligated to maintain and enhance power transmission system safety and reliability, thereby assuring continued safe, reliable delivery of power to preference customers; to encourage new initiatives for more effective use of existing regional generation resources; and to participate with non-Federal interests in joint transmission projects of benefit to the Government. In addition to appropriated funds, Southwestern will also use Federal and non-Federal reimbursable authority, net billing, bill crediting, and non-appropriation transfer to accomplish certain needed transmission system repairs, modifications, or additions. This initiative reduces Southwestern's need for new appropriations, while encouraging initiatives to enhance regional transmission system capacity and reliability and to respond to emergency requests for assistance from customers.

Trends

- Because of increasing load growth and deteriorating system components, Southwestern's Construction program has decreased by 26.5 percent between FY 1994 and FY 1996 to focus on equipment replacement and upgrades rather than new starts.

- Southwestern has been moved into the arena of "responsible utility" where it is required by law to provide a variety of services and meet legal requirements which are in addition to the primary mission of marketing and delivering Federal power and energy to municipal and cooperative utilities. Laws such as those requiring open access to transmission systems are likely to affect Southwestern's operations and priorities in the remaining years of this century.

- As funding becomes more stringent and additional services and requirements are placed on Southwestern by its customers and interconnected utilities to develop and upgrade facilities to permit greater use of Southwestern's transmission system, Southwestern will need greater flexibility in its funding resources in order to meet its legal requirements and its responsibilities as a member of the interconnected southwestern power system. The use of alternative methods of financing, such as reimbursable authority, net billing, bill crediting and non-appropriation transfer, will increase.

Key Funding Priorities

- Continue the ongoing program for replacement, modernization, and upgrade of Southwestern's aging and obsolete transmission system facilities to accommodate increased system loading, meet modern reliability standards, improve operational effectiveness, and reduce long-term operating costs.

- Continue to participate in beneficial and cost-effective joint transmission system improvement projects with preference customers and other regional utilities through the use of appropriated funds and alternative methods of financing.

- Continue to replace capital equipment items used for the maintenance and repair of transmission system equipment and facilities according to

I. Construction (Cont'd)

DOE and GSA replacement schedules.

Other Funding Methods

- The total reimbursable authority request of $4,272,000 includes $2,150,000 for Construction activities.

- Prior year funds in the amount of $215,601 are included in the total Construction request.

II. A. Summary Table: Construction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Transmission System Replacements	$ 8,354	$ 6,033	$ 6,755	$ 722
Transmission System Improvements	3,229	4,989	2,906	-2,083
Capital Equipment Not Related to Construction	705	642	420	-222
Reimbursable Authority	-1,150	-2,150	-2,150	0
Total, Construction	$ 11,138	$ 9,514	$ 7,931	$ -1,583

II. B. Laboratory and Facility Funding Table: Construction

All Other	$ 11,138	$ 9,514	$ 7,931	$ -1,583
Total, Construction	$ 11,138	$ 9,514	$ 7,931	$ -1,583

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Construction			
Transmission System Replacements	Replaced deteriorated, worn-out, obsolete, or damaged transmission system equipment to maintain and enhance power transmission system safety and reliability. Supported engineering design, installation, and construction activities for replacement of power circuit breakers, disconnect switches, powerline carrier equipment, communication equipment, surge arrestors, current transformers, structure footings, and power transformers. ($6,539)	Continue to replace deteriorated, worn-out, obsolete, or damaged transmission system equipment to maintain power transmission system safety and reliability. Continue to support engineering design, installation, and construction activities for replacement of Supervisory Control and Data Acquisition\Energy Management System (SCADA\EMS) power circuit breakers, telemetering equipment, communication equipment, current transformers and potential transformers, transmission line crossarms, power transformers, environmental equipment disconnect switch replacements, power circuit replacements, and a Springfield building renovation. ($4,261)	Replace deteriorated, worn-out, obsolete, or damaged transmission system equipment to maintain power transmission system safety and reliability. Provide for rehabilitation and repair of buildings, access roads, mechanical facilities, and other installed plant constructed in support of Southwestern's mission. Support engineering design, installation, and construction activities for replacement of the Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS) power circuit breakers, telemetering equipment, communications equipment, current transformers, potential transformers, transmission line structures, power transformers, environmental protection equipment, disconnect switches, power system protective relays, and renovation of three substation and maintenance buildings. Increase in funding is due to the need to continue a focus on non-routine equipment replacement and upgrades rather than new starts. ($6,755)
	Expanded program to replace deteriorated, worn-out, and obsolete transmission system protective relays at an optimum level of effort, which will over a period of years, enable the adequate maintenance of personnel safety, power delivery reliability, and protection of equipment from loss or damage. ($1815)	Continue to replace deteriorated, worn-out, and obsolete transmission protective relays which will, over a period of years, enable the adequate maintenance of personnel safety, power delivery reliability, and protection of power system equipment. ($1,772)	
	$ 8,354	$ 6,033	$ 6,755

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III. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transmission System Improvements	Replaced existing components of Southwestern's transmission system with new components with larger capacities in order to improve the system's overall performance and reliability. Modified and added to previously installed facilities to accommodate requirements of new power sales contracts and variable requirements of interconnected system operations. ($1,044)	Continue to replace existing components of Southwestern's transmission system with new components with larger capacities in order to improve the system's overall performance and reliability as Southwestern moves to the mid-1990's ultimate high system loading. Modify and add to previously installed facilities to accommodate requirements of new power sales contracts. Continue to identify transmission system additions through joint regional planning efforts which allow more effective use of generation and transmission resources. Included transmission system replacements, modifications, and additions. Included engineering feasibility studies, environmental studies, and design, and construction activities. Continue to improve equipment to increase transmission capacity and transmission communications reliability. Include bus modifications and bay additions at existing substations, some of which are to accommodate customer interconnections, allow more efficient overall system operation. In addition to the above, this funding level allows: - Microwave site improvements. - Very High Frequency System Improvements. - Relay carrier auto checkback system. - Equipment improvements. - Environmental facility improvements. ($981)	Provide for modifications and additions to previously installed facilities to accommodate requirements of new power sales contracts, to remedy reliability weaknesses, and to correct safety and environmental deficiencies, specifically, transmission system additions identified by joint regional planning efforts which allow more effective use of generation and transmission resources. These efforts involve engineering feasibility studies, environmental studies, design, and construction activities. Equipment will be improved to increase transmission capacity and transmission communications reliability. Bus modifications and bay additions at existing substations, some of which are to accommodate customer interconnections and allow more efficient overall system operation. Decrease in funding is due to an emphasis on maintaining the transmission system. No new starts are proposed for FY 1996. ($756)
	Refurbished a spare transformer required to reduce the risk of extended power and transmission system outages, particularly in the area of the New Madrid Fault Zone. ($830)	Continue to refurbish a spare transformer for future use in meeting emergency situations. ($28)	No Activity.

III. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transmission System Improvements (Cont'd)	Funded the Clarksville breaker addition and computer-aided design addition transmission system improvement projects to reduce the risk of extended outages. ($205)	Continue the installation of the power circuit breaker and associated equipment at Clarksville to complete the project as originally designed. ($119)	No Activity.
	Non-Federal funds related to joint utility participation projects reduced Southwestern's need for new appropriations.	Non-Federal funds related to joint utility participation projects reduce Southwestern's need for new appropriations.	Non-Federal funds related to joint utility participation projects reduce Southwestern's need for new appropriations.
		Unobligated balances from FY 1993 ($1,711) will be used to complete the Western Farmer's joint participation project. This project was delayed from FY 1993 until FY 1995 because planning considerations were revised to include other utilities.	No Activity.
	Southwestern had no unobligated funds available at the end of FY 1993 to offset the FY 1994 construction program.	Unobligated balances from FY 1993 Purchased Power and Wheeling ($3,052) and Construction funds ($644) will be used to fund FY 1995 Construction requirements.	Unobligated balances from FY 1994 ($215) will be used to fund Construction requirements.
	Non-Federal ($1,000) Federal ($150)	Non-Federal ($2,000) Federal ($150)	Non-Federal ($2,000) Federal ($150)
	$ 3,229	$ 4,989	$ 2,906
Capital Equipment Not Related to Construction	Replaced vehicles, tractors, trailers, and heavy equipment used for maintenance and repair of transmission system equipment and facilities. Replacements were based upon DOE and GSA usage and replacement guidelines. The increase over prior year requirements was due to replacement of several large vehicles including pole trucks, pole diggers, and pole cranes.	Continue to replace vehicles, tractors, trailers, and heavy equipment used for maintenance and repair of transmission system equipment and facilities. Replacements are based upon DOE and GSA usage and replacement guidelines.	Replace vehicles, tractors, trailers, and heavy equipment used for maintenance and repair of transmission system equipment and facilities. Replacements are based upon DOE and GSA usage and replacement guidelines.

III. Construction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment Not Related to Construction (Cont'd)	$ 705	$ 642	$ 420
Reimbursable Authority	-$ 1,150	-$ 2,150	-$ 2,150
Construction	$ 11,138	$ 9,514	$ 7,931

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
POWER MARKETING ADMINISTRATION
(dollars in thousands)

REVENUE AND RECEIPT REPORT

SOUTHWESTERN POWER ADMINISTRATION

Southwestern Power Administration	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Gross Revenues	$ 99,274	$ 99,718	$ 99,972	$ 99,383	$ 96,869	$ 97,334	$ 97,334
Receipts:							
Sale and transmission of electric energy	$ 98,075*	$ 96,118	$ 94,872	$ 94,883	$ 93,969	$ 95,434	$ 95,434
Net billing amt. credited back to Appro. as an offsetting receipt	$1,183	$3,600	$ 5,100	$ 4,500	$ 2,900	$ 1,900	$ 1,900
Percent of sales to preference customers	100%	100%	100%	100%	100%	100%	100%
Energy Sales from Power Marketed (billions of kilowatt hours)	5.5	5.5	5.5	5.5	5.3	5.3	5.3

* This number does not include the value of banked energy and reimbursable, only the actual amount deposited in Treasury Account 89-224700-0 in FY 1994.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

SYSTEM STATISTICS

SOUTHWESTERN POWER ADMINISTRATION

	1994 ACTUAL	1995 ESTIMATE	1996 ESTIMATE
GENERATING CAPACITY:			
INSTALLED CAPACITY (KW)	2,157,800	2,157,800	2,157,800
PEAK CAPACITY (KW)	2,092,500	2,092,500	2,092,500
GENERATING STATIONS:			
GENERATING PROJECTS (NO.)	24	24	24
SUBSTATIONS/SWITCHYARDS (NO.)	24	24	24
SUBSTATIONS/SWITCHYARDS (KVA CAPACITY)	1,026,900	1,026,900	1,026,900
AVAILABLE ENERGY:			
ENERGY GENERATED (MEGAWATT-HOURS)	6,938,793	5,182,600	5,182,900
ENERGY RECEIVED (MEGAWATT-HOURS)	55,686	282,300	282,400
ENERGY AVAILABLE FOR MARKETING (MEGAWATT-HOURS)	6,994,479	5,464,900	5,465,300
TRANSMISSION LINES (CIRCUIT MILES):			
161 KV	1,119	1,119	1,119
138 KV	164	164	164
69 KV	99	99	99
TOTAL CIRCUIT MILES	1,382	1,382	1,382

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DEPARTMENT OF ENERGY
1996 CONGRESSIONAL BUDGET REQUEST
POWER MARKETED, WHEELED, OR EXCHANGED BY PROJECT

SOUTHWESTERN POWER ADMINISTRATION

PROJECT	STATE	NO. OF PLANTS	INSTALLED CAPACITY (KW)	1994 ACTUAL ENERGY (GWH)	1995 ESTIMATED ENERGY (GWH)	1996 ESTIMATED ENERGY (GWH)
POWER MARKETED						
(INTERCONNECTED SYSTEM)	MISSOURI	4	463,200	2,601	2,161	2,161
	ARKANSAS	9	1,021,100	1,065	824	824
	OKLAHOMA	7	514,100	1,237	1,034	1,035
	TEXAS	2	100,000	682	671	671
	LOUISIANA			414	295	295
	KANSAS			433	328	328
SUBTOTALS		22	2,098,400	6,432	5,313	5,314
ISOLATED						
ROBERT D WILLIS PROJECT						
SAM RAYBURN PROJECT	TEXAS	2	59,400	74	76	76
50% TO TX; 50% TO LA	LOUISIANA			74	76	76
SUBTOTALS		2	59,400	148	152	152
TOTAL, POWER MARKETED		24	2,157,800	6,580	5,465	5,466
POWER WHEELED AND EXCHANGED						
WHEELED (MW)						
EXCHANGED (GWH)				515	446	446
				(104)	158	175

1/ FORMERLY TOWN BLUFF PROJECT, ON-LINE-DATE, DECEMBER 1, 1989

Western Area Power Administration

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Construction, Rehabilitation, Operation and Maintenance,
Western Area Power Administration

(Including Transfer of Funds)

For carrying out the functions authorized by title III, section 302(a)(1)(E) of the Act of August 4, 1977 (42 U.S.C. 7101, et seq.), and other related activities including conservation and renewable resources programs as authorized, including official reception and representation expenses in an amount not to exceed $1,500, [$222,285,000] $306,352,000, to remain available until expended, of which [$202,512,000] $293,851,000 shall be derived from the Department of Interior Reclamation Fund: *Provided*, That of the amount herein appropriated, [within available funds, $5,135,000] $5,283,000 is for deposit into the Utah Reclamation Mitigation and Conservation Account pursuant to title IV of the Reclamation Projects Authorization and Adjustment Act of 1992: *Provided further*, That the Secretary of the Treasury is authorized to transfer from the Colorado River Dam fund to the Western Area Power Administration [$7,472,000] $4,556,000, to carry out the power marketing and transmission activities of the Boulder Canyon project as proved in section 104(a)(4) of the Hoover Power Plant Act of 1984, to remain available until expended.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION

OVERVIEW

The Western Area Power Administration (Western) markets Federal hydropower over a complex, interconnected transmission system to provide benefits to millions of people throughout a 1.3-million-square-mile area in the central and western United States. Western provides efficient and reliable electric power to more than 600 customers in concert with a commitment to energy efficiency, renewable energy diversity, and environmental preservation. The focus of Western's operations and planning activities is broadening from marketing electric energy to customers to providing customers with energy services. These services include assisting customers with integrated resource planning to guide their long-term resource acquisition in compliance with the Energy Policy Act of 1992. Western is also responding to a more competitive and diverse wholesale electricity market which will increase demand for transmission access on Western's power system.

Western develops power marketing plans to allocate limited hydropower resources among our customers and to optimize the benefits of Federal power and transmission services. Once power marketing plans are adopted, Western enters into contracts with customers to implement those plans. These contracts cover not only firm power sales, but extend to transmission service, interconnections, operation and maintenance of the infrastructure, emergency services, short-term power sales, and energy service plans. Western also markets its power resources in coordination with regional utilities to hold down costs to Western's customers. Western markets power produced at Federal dams at rates that (1) repay operation, maintenance, purchase power, and transmission service expenses; (2) ensure repayment of the Federal power investment with interest; and (3) assist in the repayment of irrigation investment that is beyond the repayment ability of the irrigators.

As part of the Administration's proposal to reinvent the Department of Energy, legislation will be proposed to privatize this power marketing activity. The Administration believes the purpose for the Federal Government developing and conducting these activities has been achieved and that these functions should now be performed by non-Federal entities. The proposal will provide customers protection against significant rate increases. A specific proposal for sale will be developed after active and careful consultation with Congress and other interested parties.

Western's program is divided into five activities: (1) Operation and Maintenance, (2) Purchase Power and Wheeling, (3) Construction and Rehabilitation, (4) a contribution for Utah Mitigation and Conservation, and (5) operation, maintenance and emergency costs of the hydroelectric facilities of Falcon and Amistad Dams. Funding for these activities is primarily through annual appropriations from Congress under the Construction, Rehabilitation, Operation and Maintenance (CROBM) Account and the Falcon and Amistad Operating and Maintenance Fund, and direct use of receipts under the Colorado River Basins Power Marketing Fund. Under the Hoover Power Plant Act of 1984, receipts from the Boulder Canyon Project are available without further appropriation. A description of Western's five activities follows:

OPERATION AND MAINTENANCE

Western's transmission system is a vital element of the Nation's electricity grid and the infrastructure in Western's service territory. It must be operated and maintained at established industry standards while accommodating system changes and increased demand. Western plans for systematic replacement and equipment upgrades. These activities ensure system reliability, integrity, and efficiency by using state-of-the-art equipment and technology. Western's commitment to a clean, environmentally-safe future is reflected in its aggressive, long-range environmental compliance plan. The plan includes waste minimization, facility investigations and inventory, disposal and replacement of polluted equipment and soil, and personnel training. Western also performs work for other Federal entities under reimbursable agreements and for non-federal entities under the Contributed Funds Act.

System reliability requires an effective operation and maintenance program, including inspection and maintenance of transmission lines, substations, other system facilities, and equipment. Ongoing power system studies of current and projected operational demands identify the need for improvements or efficiencies and identify opportunities to use state-of-the-art or emerging technologies in the interconnected transmission system. Western's security and emergency coordination program focuses on system reliability through ongoing vulnerability assessments, emergency planning, and simulated exercises. The energy services program concentrates on maximizing the efficient use of energy resources.

PURCHASE POWER AND WHEELING

Western's goal is to effectively market Federal energy resources in accordance with legislation and existing contractual commitments. In support of this goal, Western purchases power (energy and capacity) to firm up Federal hydropower supplies, primarily for the Central Valley Project in California. Western also purchases power to assure that deliveries are not subject to curtailment when unanticipated events, such as drought, occur. In addition to energy and capacity purchases, wheeling services are acquired whenever a third party's transmission lines are needed to deliver Federal power to Western's customers.

Western is committed to using a variety of financial tools, including alternative financing methods, to provide reliable, uninterrupted service to our customers. In order to minimize the need for appropriations, alternative financing (such as net billing, bill crediting, reimbursable authority and nonappropriation transfers) is used to fund a large portion of the purchase power and wheeling program activity. Receipts deposited in the U.S. Treasury are reduced by the amount of alternative financing.

Dry conditions are continuing in the Colorado River Basin, while parts of the Missouri River Basin have received significant rainfall. FY 1995 is expected to be a recovery year for the Central Valley Project in northern California. For the past few years, environmental concerns have placed constraints on generation in Western's Central Valley Project and on the Colorado River. Purchases in FY 1994 totaled about 9.0 billion kilowatthours, which is down from the near record-breaking purchases of 11.7 billion kilowatthours in FY 1993. It is estimated that purchases will continue to decline to about 7.4 billion kilowatthours in FY 1996. Because of fluctuating water conditions and other constraints that affect generation, Western's challenge is to maintain adequate financial resources, including the use of alternative financing methods, to meet contractual energy deliveries.

CONSTRUCTION AND REHABILITATION

Western's construction activity improves opportunities for economic purchases of capacity or energy during drought conditions, emergencies and other occasions when appropriate. Upgrades and rehabilitation of existing facilities are pursued to provide adequate system reliability, reduce outages, lower maintenance costs, reduce transmission losses, and improve overall system operating efficiency. Western is replacing transmission lines and substation equipment that pose reliability and safety concerns. As part of the interconnected utility system, Western must be prepared to make system changes required by changing conditions and system reliability requirements. Because of its large transmission system, Western is often a major partner in coordinating planning among affected parties to identify the most effective transmission system improvements. Western is pursuing state-of-the-art and emerging electric power technologies. These technologies are incorporated into Western's transmission system rehabilitation program to maintain and improve reliability of operations, optimize use of available resources, and meet safety and environmental objectives in a cost-effective manner.

In response to the need for Federal budget restraint, efficiency, and environmental sensitivity, Western works with other utilities to formulate joint plans for needed construction projects in a manner which will reduce the requirement for Federal appropriations. Those joint participation projects provide benefits from economy of scale, greater efficiency, better use of limited land resources, and reduced proliferation of smaller individually-owned facilities.

UTAH MITIGATION AND CONSERVATION

The Reclamation Projects Authorization and Adjustment Act of 1992, Title III -- Fish, Wildlife, and Recreation Mitigation and Conservation, provided for the establishment of the Utah Reclamation Mitigation and Conservation Commission. Under Title IV of this Act, funds are authorized for deposit by Western's Administrator into the Utah Reclamation Mitigation and Conservation Account in the Treasury of the United States. Funds in the account are to be used by the Commission to "ensure that the level of environmental protection, mitigation, and enhancement achieved in connection with projects identified in the Act and elsewhere in the Colorado River Storage Project in the State of Utah is preserved and maintained."

FALCON AND AMISTAD MAINTENANCE

The Foreign Relations Authorization Act, Fiscal Years 1994 and 1995, directed a separate fund, known as the Falcon and Amistad Operating and Maintenance Fund (Maintenance Fund), be created in the Treasury of the United States. The Maintenance Fund is administered by the Administrator of the Western Area Power Administration for use by the Commissioner of the United States Section of the International Boundary and Water Commission (IBWC) to defray operation, maintenance (O&M), and emergency costs for the hydroelectric facilities at the Falcon and Amistad Dams. All revenues collected in connection with the disposition of electric power generated at the Falcon and Amistad Dams, except monies received from the Government of Mexico, are credited to the Maintenance Fund and shall remain available until expended to the extent such amounts are provided in advance in appropriation acts. Monies received from the Government of Mexico for any energy which might be delivered to that Government by the IBWC shall be credited to the general fund of the Treasury of the United States.

PROGRAM EVALUATION

Evaluation of Western's program is an ongoing process to assure that we can continue to market and transmit reliable, low-cost electric energy, provide related services, and encourage efficient energy management in an environmentally-sound manner. Western has just completed an extensive strategic planning effort which included an in-depth review of all major program areas. The strategic planning effort resulted in a 9% reduction of Federal positions. As part of the Contract Reform Team review of support service contracts, Western reduced support service contracts by 7%. Western's Annual Report reflects program accomplishments and progress to date. The Power Repayment Studies for each of the power systems track Western's ability to repay costs in the future. Western's customers are key players in this process. Western has formed partnerships with our customers to develop long-range plans for capitalized investment planning. Our customers participate in cost containment reviews of our annual expenses. The results of these reviews are reflected in Western's budget request.

STREAMLINING ACTIVITIES

Although Western has experienced considerable program growth since its establishment in FY 1977, Western's Federal FTE and support services contract support has remained relatively stable. Western continuously assesses its methods of operation in partnership with our customers to maximize the efficiency and effectiveness of our workforce. The number of National Performance Review targeted positions is declining even though Western's requirements are expanding to provide fiscal accounting services for the DOE Golden Field Office, the 10 DOE support offices, and Rocky Flats; as well as integration of three of the Power Marketing Administrations' accounting systems with Western's financial management system in order to comply with the Chief Financial Officer's Act of 1990. Strategic planning processes have led to realignment of headquarters positions to the Area offices to provide for development of craft apprentices and to meet increased operation and maintenance for the recently completed California-Oregon Transmission Project. Despite a shrinking work force, Western continues to dedicate a percentage of its full-time equivalent positions to special employment initiatives and disability programs. Numerous quality improvements are underway leading to reduced organizational layers, elimination of eight GM-14 and -15 positions, and an increase of 67% in the supervisor-to-employee ratio for traditional employees. Western's overall supervisor-to-employee ratio is limited by the craft worker portion of our work force for safety and efficiency reasons. These crews represent about one-third of the work force. In partnership with our customers, Western will continue to make cost conscious, quality investment decisions and to manage our resources in the most cost-effective manner possible.

OUTPUT MEASURES:

Operating Effectiveness:

Area Control Error (ACE) percentage exceeds the National Electric Reliability Council performance standard of 90 percent in FY 1994 through FY 1996. Western's FY 1994 ACE percentage was 98.1.

Overview - CONSTRUCTION, REHABILITATION, OPERATION & MAINTENANCE, WAPA (Cont'd)

Scheduled Maintenance Completed:

Circuit miles of transmission lines/substations operated and maintained is 16,727/257 in FY 1994, 16,737/258 in FY 1995, and 16,734/259 in FY 1996.

The miles of transmission line (wood poles) being rehabilitated is 57 in FY 1994, 45 in FY 1995, and 4.5 in FY 1996.

The number of substations being rehabilitated is 24 in FY 1994, 23 in FY 1995, and 25 in FY 1996.

Principal Payment:

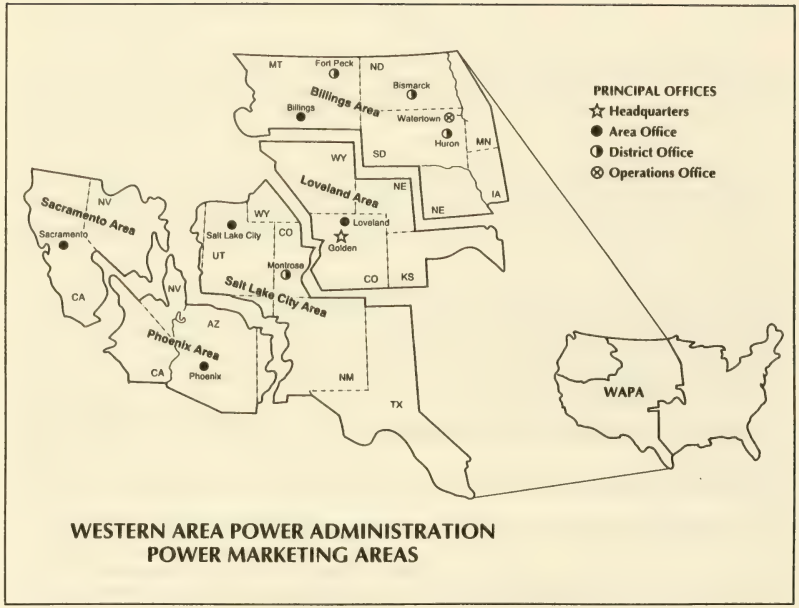
The output measure is to achieve actual principal repayment in a fiscal year that is at least equal to the planned principal repayment for that year.

Cost Growth:

The change in actual regular operation and maintenance expenditures from one year to the next is no greater than the annual rate of inflation for the same period.

Safety:

Western's calendar year 1994 lost workday frequency rate of 1.0 case per 200,000 hours worked is lower than the average for the electric utility industry as reported by the National Safety Council. Current industry standard is 2.5 cases per 200,000 hours worked.



WESTERN AREA POWER ADMINISTRATION
POWER MARKETING AREAS

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

LEAD TABLE

CONSTRUCTION, REHABILITATION, OPERATION AND MAINTENANCE ACCOUNT

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Construction, Rehabilitation, Operation and Maintenance Account					
Construction and Rehabilitation	$ 121,695	$ 92,883		$ 92,883	$ 66,512
Operation and Maintenance	129,376	131,797		131,797	128,958
Purchase Power and Wheeling	105,053	104,986		104,986	118,175
Utah Mitigation and Conservation	5,000	5,135		5,135	5,283
Total Program 1/	$ 361,124	$ 334,801		$ 334,801	$ 318,928
Planned Use of Prior Year Balances 2/	-75,000	-105,044		-105,044	-8,020
Total Budget Authority Request (Current and Permanent)	$ 286,124	$ 229,757		$ 229,757	$ 310,908
Permanent Budget Authority	($ 8,168)	($ 7,472) 5/		($ 7,472)	($ 4,556)
Current Budget Authority	($ 277,956)	($ 222,285)		($ 222,285)	($ 306,352)
Memorandum Amount Administrative Expenses 3/	$ 33,795	$ 33,699		$ 33,699	$ 33,636
Staffing (FTEs) 4/	1,289	1,258		1,258	1,252

Authorizations:
P.L. 57-161, "The Reclamation Act of 1902"
P.L. 66-389, "Contributed Funds Act (1921)
P.L. 76-260, "Reclamation Project Act of 1939"
P.L. 80-790, "Emergency Fund Act of 1948"
P.L. 95-91, "Department of Energy Organization Act" (1977)
P.L. 98-381, "Hoover Power Plant Act of 1984"
P.L. 102-486, "Energy Policy Act of 1992"
P.L. 102-575, "Reclamation Projects Authorization and Adjustment Act of 1992"

1/ Crosswalk between new budget authority and planned program.

Item: Planned Program	FY 1994 Adjusted	FY 1995 Appropriation	FY 1996 Request
Current Budget Authority	$ 277,956	$ 222,285	$ 306,352
Construction and Rehabilitation	(118,695)	(89,612)	(63,105)
Operation and Maintenance	(125,554)	(127,538)	(124,255)
Purchase Power and Wheeling	(28,707)	(0)	(113,709)
Utah Mitigation and Conservation	(5,000)	(5,135)	(5,283)
Permanent Budget Authority	8,168	7,472	4,556
Operation and Maintenance	(3,822)	(3,992)	(3,703)
Purchase Power and Wheeling	(4,346)	(3,480)	(853)
Total Budget Authority Request (Current and Permanent)	$ 286,124	$ 229,757	$ 310,908
Planned Use Of Prior Year Balances	$ 75,000	$ 105,044	$ 8,020
Construction and Rehabilitation	(+3,000)	(+3,271)	(+3,407)
Operation and Maintenance	(0)	(+267)	(+1,000)
Purchase Power and Wheeling	(+72,000)	(+101,506)	(+3,613)
Subtotal, Planned Program	$ 361,124	$ 334,801	$ 318,928
Less Permanent Budget Authority	-8,168	-7,472	-4,556
Total Planned Program from Current Budget Authority	$ 352,956	$ 327,329	$ 314,372

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Item: Actual Program	FY 1994 Adjusted		FY 1995 Appropriation		FY 1996 Request	
Current Budget Authority	**$ 277,956**		**$ 222,285**		**$ 306,352**	
Permanent Budget Authority	**8,168**		**7,472**		**4,556**	
Unobligated Balances, Start of Year	**64,528**		**92,451**		**8,020**	
Transfer to DOE			(13,500)	e/		
Construction and Rehabilitation	(1,600)		(16,402)	f/	(3,407)	
Operation and Maintenance	(2,918)	a/	(3,273)	g/	(1,000)	
Purchase Power and Wheeling	(60,010)	b/	(59,276)		(3,613)	k/
Transfer to DOE	**0**		**-13,500**	e/	**0**	
Use of Prior Year Balances	**76,449**		**43,872**		**0**	
Construction and Rehabilitation	(758)		(0)		(0)	
Operation and Maintenance	(724)		(0)		(0)	
Purchase Power and Wheeling	(74,967)	c/	(43,872)	h/	(0)	
Unobligated Balance, End of Year	**-92,451**		**-8,020**		**0**	
Construction and Rehabilitation	(-17,152)		(-3,407)		(0)	
Operation and Maintenance	(-12,229)		(-3,006)	j/	(0)	
Purchase Power and Wheeling	(-63,070)	d/	(-1,607)	j/	(0)	
Total Actual Program	**$ 334,650**		**$ 344,560**		**$ 318,928**	

a/ Current Budget Authority $1,740,000, Permanent Budget Authority $1,178,000

b/ Current Budget Authority $60,010,000

c/ Includes $14,628,000 of the $39,000,000 Western/PG&E reconciliation of 1985-1992 energy rates for Energy Account No. 2, $58,792,000 from Western PG&E capacity settlement, and $1,547,000 in other recoveries.

d/ FY 1994 end of year balance includes $14,628,000 from energy settlement, $46,792,000 from capacity settlement, $1,607,000 permanent authority for Boulder Canyon and $43,000 other unobligated balance. The Construction and Rehabilitation start of year unobligated balance for FY 1995 includes $1,294,000 of the FY 1994 unobligated balances made available by the PG&E energy settlement.

e/ Reflects unobligated balances transferred within the Department of Energy: $8,956,000 Operation and Maintenance, $2,500,000 Purchase Power and Wheeling, and $2,044,000 Construction and Rehabilitation.

f/ Includes $1,294,000 of the energy settlement (See footnote d) $176,712 mandated savings from savings in support services contracts, $1,800,000 Congressionally-mandated savings from FY 1994, $12,800,000 for award of SCADA contract deferred from FY 1994, and $331,000 other unobligated balances.

g/ Current Budget Authority $1,000,000 reserved for FY 1996 program, $267,288 Congressionally-mandated savings from support services contract savings; and Permanent Budget Authority $2,006,000.

h/ Includes $17,000,000 from the Western/PG&E capacity settlement, $24,372,000 from the 1985-92 Western/PG&E energy settlement, and $2,500,000 for FY 1993 energy settlement true up. The balance of the energy settlement is reflected as $1,294,000 unobligated balance start of FY 1995 construction and rehabilitation program, and $13,334,000 in PP&W program.

i/ Current $1,000,000, Permanent $2,006,000.

j/ Current 0. Permanent $1,607,000.

k/ Current 0, Permanent $3,613,000, includes $2,006,000 realigned from Operation and Maintenance.

2/ Prior year balances in FY 1994 ($75,000,000) include use of settlement amounts from the Western/PG&E capacity rate lawsuit ($72,000,000), and reduction in the construction and rehabilitation activity due to downward adjustment of price estimates for the Mead-Phoenix 500-kV transmission project ($3,000,000). Prior year balances in FY 1995 ($105,044,000) include use of settlement amounts from the Western/PG&E capacity rate lawsuit ($63,800,000), amounts from the reconciliation of 1985-1992 energy rates for Energy Account No. 2 with PG&E ($39,000,000 million), mandated savings in support services contract costs in FY 1994 ($444,000), and Congressionally mandated savings in construction and rehabilitation program ($1,800,000). The FY 1996 request assumes use of $8,020,000 from FY 1995 unobligated balances.

3/ Western's total administrative expenses excluding personnel and benefit costs. In accordance with Executive Order 12837, the FY 1993 administrative costs were adjusted for inflation and reduced 3 percent in FY 1994, FY 1995, and FY 1996, respectively.

4/ Staffing Distribution: This includes both regular FTE and Special Program FTE for Federal Junior Fellows, co-operative education students, stay-in-school students, etc.

5/ Reflects use of $1,000,000 in prior year balances from permanent budget authority.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

CONSTRUCTION, REHABILITATION, OPERATION AND MAINTENANCE

FY 1995 Appropriation	$229,757
- Adjustment	0
FY 1995 Adjusted (Non-comparable)	$229,757
FY 1996 Major Program Changes	
Operation and Maintenance	
- Regular O&M - Decreased request due to aggressive implementation of cost reductions in cooperation with our customers and completion of an environmental impact statement related to a power marketing plan	-2,274
- Replacements and Additions - Decrease reflects decisions made in concert with our customers to assure stability of rates	-565
- Planned use of prior year balances, Net for FY 1995 and FY 1996	-733
Purchase Power and Wheeling	
- Central Valley Project - The total purchase power and wheeling program request for Central Valley Project increases 5 percent between FY 1995 and FY 1996. Improved water conditions will result in reduced purchases; however, this reduction is more than offset by increases in energy costs. About 1.5 percent of the increase is due to increases in rates dictated by supplier contract provisions. The remaining 3.5 percent increase is due to increased costs and purchases from Northwest and in-state suppliers and reduced purchases from the Energy Account No.2 (EA2). The outstanding balance of the EA2 bank account is being reduced at a rate which minimizes costs and maximizes rate stability through year 2004	+11,646
- Pick-Sloan Missouri Basin Program - Wheeling expenses to transmit energy generated at the Mt. Elbert Powerplant (Colorado) to Western's transmission system are increasing. The supplier is not willing to participate in net billing arrangements. Therefore, budget authority is required for the Fryingpan-Arkansas Project	+522
- Other Projects - Additional and more costly purchases are required for the Boulder Canyon Project. Generation will continue to be restricted by changes in operation of upstream releases due to environmental concerns. In addition, power must be purchased on the open market rather than through previous interchange arrangements with the Glen Canyon Powerplant and Navajo Generating Station, which will result in increased costs	+986
- Planned use of prior year balances, Net in FY 1995 and FY 1996	+97,928

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Construction and Rehabilitation

- Transmission Lines and Terminal Facilities - Decrease in program is primarily due to reduced funding required for the Mead-Phoenix and Mead-Adelanto Projects. FY 1994 and FY 1995 were the peak construction years for these projects. The projects will be placed in service during the second quarter of FY 1996.	-23,062
- Substations - Slight increase in level of effort for replacement of existing substation equipment. Replacement required due to age and obsolete parts.	+977
- Other - Reduction due to completion of maintenance facilities construction within Western's service area and obligation of contract award for SCADA in the Pick-Sloan Missouri River Basin Program in FY 1995.	-14,010
- Planned use of prior year balances, Net for FY 1995 and FY 1996	+9,588
Utah Mitigation and Conservation	
- Increased contribution reflects proportional increase based on Consumer Price Index for urban consumers for the previous calendar year as required by Public Law 102-575.	+148
FY 1996 Congressional Budget Request.	$310,908

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

CONSTRUCTION, REHABILITATION, OPERATION AND MAINTENANCE ACCOUNT

I. Preface: Operation and Maintenance

Western's operation and maintenance (O&M) activity helps ensure an adequate supply of reliable energy in a clean and environmentally-safe, cost-effective manner. This is achieved by maintaining continuity of service through a well-maintained power system, rapidly restoring service following any system disturbances, mitigation of adverse environmental impacts, performing clean-up activities, and maximizing the revenues gained from non-firm energy sales. Western's environmental cleanup activities include a 10-year plan (initiated in FY 1990) which consists of facility investigations, disposal and replacement of contaminated equipment and soil, asbestos removal, and personnel training. In FY 1996, electric power marketed by Western will be generated at 54 hydropower plants which are operated primarily by the Bureau of Reclamation (BuRec), the Corps of Engineers (COE), and the International Boundary and Water Commission (IBWC). Western also markets the United States' entitlement from the Navajo coal-fired powerplant near Page, Arizona. Western's power marketing function evolved over a period of years as BuRec, COE, and IBWC multipurpose water development projects were authorized. Each project is administered as an independent entity in terms of authorizing legislation and repayment of the reimbursable portion of project investment. Western's power marketing revenues for each project must be sufficient to meet the O&M cost of the associated transmission and generation facilities (including replacements and purchase power and wheeling) and to repay, with interest, the capital investment in Western's power facilities along with those of the generating facilities. In addition, power revenues must help repay the investment in associated Federal irrigation facilities that is beyond the water users' ability to repay and help repay certain other nonpower costs assigned to power for repayment.

Since its creation in 1977, Western has developed comprehensive power marketing plans when existing power sales contracts expire. Each plan is developed through a public comment and consultation process. The plans help ensure that Western carries out its power marketing role in the public interest consistent with Congressional intent. Western staff write, review, revise, and negotiate power sales and facilities contracts with more than 600 wholesale power customers. Western sells power to customers including cooperatives, municipalities, public utility districts, investor-owned utilities, State and Federal agencies (including DOE national laboratories), and irrigation districts. These wholesale power customers, in turn, provide service to millions of retail consumers.

Equipment replacements, such as circuit breakers, transformers, revenue meters, switches, control boards, relays and oscillographs are normally scheduled according to length of service usage, availability of replacement parts, and current maintenance costs. Some substation equipment is replaced in response to environmental concerns, changing loads, resources, and other electrical characteristics of neighboring utilities on the interconnected transmission system. The newer equipment often has a longer life due to technological improvements which, in turn, result in a lower annual life cost.

Western's energy services program encompasses a wide range of policy objectives: to encourage energy conservation activities that reduce the inefficient use of electricity; to improve the generation, transmission, and end-use efficiencies of electrical power to enhance the role of electricity in the energy market; and to ensure that the benefits of energy conservation and renewable energy technologies are sufficiently evaluated to enable a fair comparison with conventional power sources. This assistance takes the form of technology transfers, technical assistance, equipment loans, and cost-shared project development. The Energy Policy Act of 1992 requires Western's customers to develop and implement integrated resource plans or face the imposition of a surcharge on all power sold to the customer by Western. Integrated resource planning, which involves evaluating both supply-side and demand-side resources to meet future resource needs, promises to provide both economic and environmental benefits. Western's commitment to customer service will continue to be demonstrated through innovative energy services programs.

Western's security and emergency management program protects the interconnected electrical power system by ensuring the security of Western's employees, assets, information, facilities, and equipment. The program, in partnership with the North American Electric Reliability Council,

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I. Operation and Maintenance (Cont'd)

DOE, BuRec, COE, and law enforcement agencies, is based on risk evaluations using known and/or potential threats.

Two subactivities describe Western's overall O&M activity: (1) regular O&M, and (2) replacements and additions. The regular O&M activity is further divided into subelements (facility and systemwide expenses) in order to more fully describe O&M accomplishments and goals in the FY 1996 budget request.

II. A. Summary Table: Operation and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operation and Maintenance				
Regular O&M				
Facility Expenses	$ 80,715	$ 83,030	$ 83,802	
Systemwide Expenses	24,375	29,172	26,126	
Subtotal, Regular O&M	$ 105,090	$ 112,202	$ 109,928	$-2,274
Replacements and Additions				
Electrical Equipment	$ 6,321	$ 8,814	$ 8,054	
Communication and Control Equipment	1,795	2,717	2,598	
Capitalized Movable Equipment	7,552	8,064	8,378	
Maintenance Facilities	31	0	0	
Subtotal, Replacements and Additions	$ 15,699	$ 19,595	$ 19,030	$ -565
Total, Program	$ 120,789	$ 131,797	$ 128,958	$-2,839
Unobligated Balances, Net	+ 8,587	- 267	- 1,000	-733
Total, Budget Authority	$ 129,376	$ 131,530	$ 127,958	$-3,572
Planned Use of Prior Year Balances	0	+ 267	+ 1,000	733
Total, Operation and Maintenance	$ 129,376	$ 131,797	$ 128,958	$ -2,839

II. B. Laboratory and Facility Funding Table: Operation and Maintenance

All Other	$ 129,376	$ 131,797	$ 128,958	$ -2,839
Total, Operation and Maintenance	$ 129,376	$ 131,797	$ 128,958	$ -2,839

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Operation and Maintenance			
Regular O&M			
Facility Expenses	Western maintained and operated over 16,700 miles of high-voltage transmission lines (approximately 13,300 miles under this appropriation and 3,400 miles under the Colorado River Basins Power Marketing Fund) and 257 substations for power delivery to its customers. Funds were used to provide for the basic operating expenses necessary to maintain substations and transmission lines in accordance with electric utility industry standards. Wages and salaries were paid to linemen, electricians, heavy equipment operators, electronic equipment mechanics, meter and relay mechanics, electrical engineers, and electronics engineers. Travel costs supported crews that often worked in isolated locations. Commercial sources provided support activity such as vehicle maintenance and electrical equipment repair. Service centers, warehouses, and garages were maintained to meet the needs of recurring maintenance work, as well as to provide supplies and services in response to extraordinary conditions, such as line repair following severe storms. Western has approximately 1,100 facility locations which must be evaluated to determine the extent of cleanup and environmental pollutants (such as soil contaminated with polychlorinated biphenyls) for environmental compliance. There are several locations where Western equipment is located, which may not be Western-owned, i.e., meter sites, but	Western will continue to operate and maintain its high-voltage transmission system to assure reliable and efficient service to our customers. Ten miles of transmission lines will be added to the maintenance program. Western's extensive data communications and control systems (such as microwave and supervisory control and data acquisition systems) will be maintained to monitor and control power deliveries within the interconnected power system. Western will continue to identify methods to improve its safety program through increased involvement of managers, supervisors, collateral safety representatives, and operating-level employees. Western will continue environmental evaluations, assessments and cleanup activities. Training of craft employees will continue, enhancing their skills and ensuring safe working procedures.	The activities performed in this subelement represent the day-to-day maintenance of electrical and communications facilities required on a continuing basis for system reliability. Inflation in the cost of basic supplies, equipment, and stock items, such as crossarms, insulators, minor electrical equipment and parts, and framing hardware account for the 1% increase above the FY 1995 level. Western is able to hold the increase below the rate of inflation because of an aggressive cost reduction program in concert with our customers to limit annual cost increases, thereby achieving rate stability. Western will continue environmental evaluations and assessments at its facilities and other locations in FY 1996, the seventh year of its 10-year plan. The cleanup of environmental pollutants will also continue based on evaluation and assessment results. Western will continue its security and emergency management program to protect the interconnected electrical power system by ensuring the security of Western's employees, assets, information, facilities and equipment.

III. Operation and Maintenance (Cont'd):
Regular O&M (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Facility Expenses (Cont'd)	which still require an evaluation. A ten-year plan for facility evaluations was developed and implemented in FY 1990. Cleanup actions are expected to extend to 2005. In FY 1994, Western established a craft training program for linemen and electricians. The center trains personnel to work more safely and also improves work quality, thereby enhancing reliability of the transmission system.		
	$ 80,715	$ 83,030	$ 83,802
Systemwide Expenses	Western provided continuing services necessary for the overall operation of its 13 separate power systems, such as the Pick-Sloan Missouri Basin Power System in the Rocky Mountain and northern plains states; the Parker-Davis Power System in southern California, Nevada, and Arizona; and the Central Valley Power System in northern and central California. Services included system operations and load dispatching, power billing and collection, power marketing, general power resources planning, energy services, and technology transfer program activities. Power generation and transmission activities were directed from Western's five dispatch centers. Equipment at the power dispatching centers allowed Western to more effectively use its transmission system and respond to system disruptions, thereby providing better customer service. In addition, the installation of remote control and monitoring equipment at distant delivery points provided "real time"	The work under this subelement is of a continuing nature. Power will be marketed, repayment studies completed, and revenue collected. Funds will be provided for additional incremental funding for the EIS associated with the 2004 Marketing Program of the Central Valley Project. Western will continue its program to assist our firm power customers in development and implementation of integrated resource plans, provide technical assistance, broad-based technology transfer, and develop partnerships to strengthen working alliances that offer opportunities to cost-share mutual resources. Western will implement an electronic commerce capability to enable electronic exchange of standardized requests for quotations, quotes, purchase orders and notices of award with private vendors.	On-going marketing, scheduling, dispatching, and billing of Western's energy resources continues under this subelement. This request reflects a decrease of over 10% ($3.0 million) from the FY 1995 request. Western is able to avoid cost increases in this program primarily because of aggressive implementation of streamlining efforts in cooperation with our customers and the completion of the funding required for the EIS associated with the 2004 Marketing Program of the Central Valley Project. Western will continue to provide technical assistance to its customers for implementation of integrated resource plans and broad-based technology transfers. About $2.5 million of revenues will be used for the annual repayment to the State of Wyoming for its contribution to Buffalo Bill Dam and Powerplant

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III. Operation and Maintenance (Cont'd):
Regular O&M (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Systemwide Expenses (Cont'd)	information to power system dispatchers. In FY 1994, Western proposed that its long-term firm power customers prepare and implement integrated resource plans in accordance with the Energy Policy Act of 1992. To enhance the quality of integrated resource plans, Western also proposed a power marketing initiative that provides resource certainty for existing customers, while reserving enough power to meet a fair share of the needs of new customers. Western also initiated an environmental impact statement (EIS) related to the 2004 Marketing Program for the Central Valley Project (California).		improvements. Revenues are used to repay capital investments, operation and maintenance expenses, purchase power and wheeling expenses, and other costs required by law.
	$ 24,375	$ 29,172	$ 26,126
Subtotal, Regular O&M	$ 105,090	$ 112,202	$ 109,928

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III. Operation and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Replacements and Additions			
Electrical Equipment	Quality of service is becoming increasingly important. Even momentary outages may be significant given the growing number of high-tech industries and businesses that depend on computers, and the proliferation of consumer electronics. Equipment, such as circuit breakers, transformers, revenue meters, switches, control boards, relays and oscillographs were replaced in response to environmental concerns, or forecasted needs for replacing critical portions of the power system which had a high risk of failure or which required excessive maintenance due to age and deterioration.	Purchases of replacement equipment continue to assure reliable service to Western's customers. Circuit breakers and transformers will be replaced to maintain system reliability. System age, linked with environmental concerns, necessitate orderly replacement before significant problems develop. Funding is also provided for installation of a high-tech security system at Mead (Nevada) Substation, a major substation in the West. The security system replaces a guard support services contract. Based on current contract cost, the cost of the system will be recouped in three years. The system will provide visual and voice communications of the intruder(s) to the power system dispatchers via Western's microwave system, and will provide the necessary documentation for prosecution.	This request provides for the continued, systematic replacement of critical components of the power system. These replacements are required to assure continued system reliability, maximize revenues gained from energy sales, and provide a safe working environment for personnel. Circuit breakers will be replaced at Bismarck and Devils Lake (North Dakota), Maurine (South Dakota), Spencer (Iowa), Dawson County and Havre (Montana), and Wray and Raderville (Colorado). Transformers will be replaced at Rudyard (Montana) and Prospect Valley (Colorado). Foundations for circuit breakers will be replaced at Terry (Montana) and Grand Forks and Jamestown (North Dakota). A contract will be awarded to remove steel and concrete structures, a control building and cable trenches from the Ellendale (North Dakota) Substation which is no longer operable. The site will also be leveled and planted with grass. Primary line relay sets will be replaced on 12 transmission lines in South Dakota and Iowa to allow more economical trouble shooting and restoration of power to customers in a shorter period of time. The Halon fire suppressant system at the Miles City (Montana) Converter Station will be replaced. Halon is considered environmentally unsafe and

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III. Operation and Maintenance (Cont'd):
Replacements and Additions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Electrical Equipment (Cont'd)			is being removed from the market. A closed circuit security system will be installed at a substation within the Loveland (Colorado) Area. The security system will deter vandals from removing copper wire and other items that can be sold.
Communication and Control Equipment	$ 6,321 Western maintained an extensive system of data communication equipment used to operate the interconnected power system. Remote terminal units (RTU) were replaced or added at eight sites; microwave towers were replaced at five sites; and low-density microwave facilities were added to various substations to provide additional communications channels required for remote metering equipment.	$ 8,814 Western will continue to replace and upgrade microwave, system control and data acquisition (SCADA) systems, and other communication and control equipment. Microwave equipment will be added at two sites; microwave towers will be added or replaced at three sites; and monitoring units will be installed at two sites.	$ 8,054 The critical nature of each power system requires that components and modules be maintained, replaced, and upgraded on a continuing basis to provide information that allows control/dispatching centers to function at the required high standards. RTUs will be replaced at Rolla and Devaul (North Dakota) and within the Fort Peck (Montana) and Huron (South Dakota) Districts. Tone equipment between Great Falls, Bole, and Conrad (Montana) Substations will be replaced with a pilot scheme operating over microwave circuits. Multiplex equipment will be added at Charlie Creek, Lakota and Washburn (North Dakota) to improve system operations and monitoring. The staged replacement of the remote microwave alarm system will continue in Huron (South Dakota) and Bismarck (North Dakota) Districts. The system is a small SCADA system used to monitor the status of the microwave system, the VHF radio system, and the repeater buildings. It also allows malfunctioning equipment to be turned

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III. Operation and Maintenance (Cont'd):
Replacements and Additions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Communication and Control Equipment (Cont'd)			off remotely. A replacement program for transfer trip relays will begin in FY 1996 in the Huron (South Dakota) District. This equipment, along with power circuit breakers, protects the high-voltage transmission lines from damage during fault conditions. The equipment is being replaced because of age and obsolescence.
	$ 1,795	$ 2,717	$ 2,598
Capitalized Movable Equipment	Western continued to upgrade and replace capitalized movable equipment such as special purpose vehicles (e.g., cranes, auger trucks, manlifts), special purpose equipment (e.g., pole trailers, industrial tractors, brush chippers), computer-aided engineering equipment, office equipment, and ADP equipment and software. Items purchased during FY 1994 included two manlifts, a mobile crane, a pole trailer, and three tilt-bed trailers. An oil-filtering truck and a hot stick trailer were replaced due to age. An additional gas cart was purchased because of environmental regulations for maintenance of SF6 gas circuit breakers. Western's corporate administrative computer was replaced because the manufacturer of its present system no longer manufactures hardware.	Procurement of special purpose vehicles and equipment will continue in response to safety concerns identified during an independent safety review. Three manlifts, an oil-filter truck, a test trailer, a bobtail trailer, a pole trailer, and two lowboy trailers will be replaced due to safety concerns and age. Two additional manlifts will be added to the system. A dispatcher training simulator in the Electric Power Training Center will be enhanced by a mini-computer and more advanced supervisory control and data acquisition software. A corporate computer will be replaced to support the power billing system in the Sacramento (California) Area. Additional disks will be added to the existing corporate computer to accommodate the integration of all power marketing administrations onto a common financial accounting system.	This request provides funds for the on-going replacement of special purpose vehicles and equipment necessitated by age and safety concerns. The increase of $314,000 above the FY 1995 level is primarily attributable to additional purchases of test equipment. Western personnel use a wide variety of test equipment which must be upgraded to newer technologies to enable technicians to service and maintain equipment. Two manlifts (one each at Pierre, South Dakota and Loveland, Colorado), a crane at Redding (California), a line truck at Loveland (Colorado), three trailers (two in Bismarck (North Dakota) and one in Gering (Nebraska)), and two industrial tractors (one each at Bismarck and Fargo, North Dakota), will be replaced. A tracked snow tractor will be replaced at Devils Lake, North Dakota. The snow tractor is used to transport personnel and materials to the job site during

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III. Operation and Maintenance (Cont'd):
Replacements and Additions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capitalized Movable Equipment (Cont'd)		A 20-MVA mobile reactor will be added to provide temporary service should an installed reactor fail.	emergency repairs of transmission lines when ground conditions often render vehicles with tires useless. An oil reclaiming unit and an SF6 gas cart will be purchased by the Sacramento (California) Area. An oil press will be replaced at Gila (Arizona) Substation to reduce the time required to filter and clean the oil used in substation equipment. Western will continue to purchase and replace specialized test equipment such as motion analyzer and ductor tester equipment used in the maintenance of circuit breakers to determine if all phases are operating synchronously and to determine the condition of internal contacts (Mead (Nevada), Gila, Coolidge, and Phoenix (Arizona) Substations). Replacement of communication test equipment is required in the Billings (Montana) Area because of the upgrade of the microwave system from 300 to 600 channels. Meter test sets used in the O&M of revenue meters will be replaced because of age. A Marconi test set will be added in the Bismarck (North Dakota) District to reduce man-hours and equipment requirements during annual microwave maintenance. A PBX will be replaced at Fargo (North Dakota) due to depletion of spare parts and loss of manufacturer support. ADP equipment will continue to be upgraded to maintain system reliability and integrity. Wide-area network equipment such as routers and security modems will be used to connect 12 field

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III. Operation and Maintenance (Cont'd):
Replacements and Additions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capitalized Movable Equipment (Cont'd)			sites in the States of Iowa, Montana, North Dakota and South Dakota, to the corporate computer for various applications.
	$ 7,552	$ 8,064	$ 8,378
Maintenance Facilities	Security enhancements installed at the Watertown (South Dakota) operations office included forced entry resistant doors, a closed circuit television system, and a card access system. The Miles City (Montana) Substation was connected to the city's sewer system.	No activity.	No activity.
	$ 31	$ 0	$ 0
Subtotal, Replacements and Additions	$ 15,699	$ 19,595	$ 19,030
Operation and Maintenance	$ 120,789	$ 131,797	$ 128,958

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

I. Preface: Purchase Power and Wheeling

The objective of the Purchase Power and Wheeling program is to obtain electrical resources and transmission capabilities to firm up Federal hydropower supplies needed to meet Western's contractual obligations. Transmission wheeling services are purchased when a third party's transmission lines are used to deliver Federal power to Western's customers. The amount of necessary purchases is dictated by the amount of generation available, which is contingent on water conditions in the major river systems within Western's service area. In FY 1996, reservoir levels in the Missouri River Basin are projected to be near average. In the Central Valley Project (CVP), FY 1994 was relatively dry, with the fourth lowest inflow in history. FY 1995 is projected to be a recovery year for CVP, with FY 1996 near normal. On the Colorado River, generation is being impacted by environmental concerns. Glen Canyon Powerplant releases are being restricted by interim operating criteria. This is impacting downstream generation at Hoover, Parker, and Davis Powerplants and has substantially reduced the opportunities for interchange energy. Purchases must therefore be made from other sources at a higher cost. Western-wide power purchases are expected to decrease from about 9.0 billion kilowatthours in FY 1994 to 7.4 billion kilowatthours in FY 1996.

In order to minimize the need for appropriations, alternative financing arrangements, such as bill crediting, reimbursable authority, net billing, and non-appropriation transfers, are used to fund a substantial portion of the $268 million FY 1996 total program. These alternative methods of financing decrease Western's appropriation requirements but also reduce receipts to the U.S. Treasury. Alternative financing methods increase the risk that these amounts may not be realized. For example, bill crediting is dependent on voluntary customer participation. Customers may stop participating in the bill crediting program with only six months notice to Western.

Western is not proposing to finance any portion of its program in FY 1995 and FY 1996 from the Continuing Fund. This fund, established in the FY 1990 Energy and Water Development Appropriations Act provided that the Continuing Fund shall be available on an ongoing basis for defraying power purchases when Western's Administrator determines that such expenditures are necessary to meet contractual obligations for the sale and delivery of power during periods of below-normal hydropower generation. The Continuing Fund is used only when all other available resources for financing the program have been exhausted. The Continuing Fund is replenished by Western's customers within 12 months of expenditures. Thus, receipts in the U.S. Treasury are affected for only a short period of time.

There are three budget subactivities in Purchase Power and Wheeling--Central Valley Project (including the Pacific Northwest-Pacific Southwest Intertie Project), Pick-Sloan Missouri Basin Program (including the Fryingpan-Arkansas Project), and Other Projects, consisting of the Boulder Canyon and Parker-Davis Projects. The table on the following page displays total financing (in thousands of dollars) of the Purchase Power and Wheeling program. A significant portion of Western's FY 1994 and FY 1995 Purchase Power and Wheeling program is financed with funds available from settlements of the Western/Pacific Gas and Electric Company (PG&E) energy and capacity rates dispute.

Method of Financing	FY 1994		FY 1995		FY 1996	
Total, PP&W Appropriations	$104,960		$105,021		$118,175	
(New Budget Authority)	(28,707)		(0)		(113,709)	
(Permanent Budget Authority)	(4,346)		(3,480)		(853)	
(Prior Year Balances)	(71,907)	1/	(101,541)	1/,2/	(3,613)	3/
Net Billing/Bill Crediting	117,068		126,094		114,142	4/
Reimbursements from Other Federal Entities for Federal contract loads	28,923		36,000		36,000	
Nonappropriation Transfers 5/	17		0		0	
TOTAL	$250,968		$267,115		$268,317	
Reimbursements from Other Federal Entities for other than Federal contract loads 6/	7,256		11,761		12,338	
GRAND TOTAL	$258,224		$278,876		$280,655	

1/ The FY 1993 settlement of the Western/PG&E lawsuit of capacity rates and rate schedule change filed by PG&E with the Federal Energy Regulatory Commission resulted in a net return to Western from PG&E of $135,802,000 in recoveries during FY 1993/1994 and use of prior year balances in FY 1994/1995. In addition, Western and PG&E settled on the re-purchase rate for Western energy purchases from the PG&E Energy Account No. 2 (EA2), resulting in FY 1994/1995 credits of $39,000,000 for energy purchases made from FY 1985-1992, and $2,500,000 for energy purchases made in FY 1993. For FY 1994, the capacity settlement provided carryover funds of $60,010,000, prior-year recoveries of $46,792,000, and use of prior-year obligations of $12,000,000; the energy settlement provided $14,628,000 in bill credits. In addition, $1,547,000 in other prior-year obligations was recovered. Of these amounts, $71,907,000 was used in financing the FY 1994 program; leaving $63,070,000 in carryover as requested by Congress to finance the FY 1995 program.

2/ The prior year balances reflect amounts made available from the settlement of the above mentioned Western/PG&E lawsuit. The settlement resulted in carryover of funds from FY 1994 in the amount of $63,070,000 to finance the FY 1995 program as requested by Congress. Of the carryover amount, $57,669,000 is used to finance the FY 1995 purchase power and wheeling program, $1,294,000 is used to finance the FY 1995 construction program, $2,500,000 has been re-programmed to support other DOE initiatives, and $1,607,000 in permanent authority is being held in reserve to reduce the new budget authority requirement in FY 1996. In addition to the $57,669,000 carryover from FY 1994 used to support the purchase power and wheeling program, the energy settlement will result in bill credits during FY 1995 from PG&E for energy in the amount of $26,872,000 and the capacity settlement will allow use of prior-year obligations to PG&E of $17,000,000 resulting in a total use of prior year balances for the FY 1995 program of $101,541,000.

3/ Unobligated balance of FY 1994 permanent authority for Boulder Canyon is being reserved to offset the new budget authority requirement in FY 1996; $1,607,000 is from savings in the purchase power and wheeling program, and $2,006,000 is from savings in the operation and maintenance program.

4/ Reduction due to reduced purchases in the Pick-Sloan Missouri River Basin. Reservoir levels and inflows are expected to be near normal. Alternative financing increases or decreases in response to fluctuations in generation. The Missouri River Basin is a prime example. In FY 1993, purchase power and wheeling costs were over $70 million and are expected to be only about $43 million in FY 1996. Alternative financing provided the flexibility in FY 1993 for Western to meet all firm power commitments within existing budgetary resources.

5/ Due to drought and environmental restrictions, Bonneville Power Administration has not had surplus energy to sell to Western during periods when it could be used to support customer load.

6/ Other loads are power requirements separate from a Federal customer's allocation of Federal power and are paid for separately by the Federal customer. Currently, other loads are amounts of power requested and paid for by the Department of Energy laboratories in California and delivered over the California-Oregon Transmission Project. Western is able to purchase energy for the laboratories at more favorable rates than the laboratories can obtain from local suppliers.

II. A. Summary Table: Purchase Power and Wheeling

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Purchase Power and Wheeling				
Central Valley Project				
Energy, Wheeling, and Capacity Purchases.....	$ 89,406	$ 88,959	$ 100,605	
Subtotal, Central Valley Project	$ 89,406	$ 88,959	$ 100,605	$ 11,646
Pick-Sloan Missouri Basin Program				
Energy and Wheeling Purchases.....	$ 11,507	$ 11,582	$ 12,104	
Subtotal, Pick-Sloan Missouri Basin Program	$ 11,507	$ 11,582	$ 12,104	$ 522
Other Projects				
Other Projects.....	$ 4,047	$ 4,480	$ 5,466	
Subtotal, Other Projects	$ 4,047	$ 4,480	$ 5,466	$ 986
Total, Program	$ 104,960	$ 105,021	$ 118,175	$ 13,154
Unobligated Balances, Net	-71,907	-101,541	-3,613	$ 97,928
Total, Budget Authority	$ 33,053	$ 3,480	$ 114,562	$ 111,082
Planned Use of Prior Year Balances	72,000	101,506	3,613	$ -97,893
Total, Purchase Power and Wheeling	$ 105,053	$ 104,986	$ 118,175	$ 13,189

II. B. Laboratory and Facility Funding Table: Purchase Power and Wheeling

All Other	$ 105,053	$ 104,986	$ 118,175	$ 13,189
Total, Purchase Power and Wheeling	$ 105,053	$ 104,986	$ 118,175	$ 13,189

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Purchase Power and Wheeling			
Central Valley Project			
Energy, Wheeling, and Capacity Purchases	Purchased energy, wheeling, and capacity to meet Western's contractual commitments for customer energy load. Energy suppliers include the Pacific Gas and Electric Company (PG&E), small suppliers in California and out-of-state suppliers, primarily in the Pacific Northwest. Northwest suppliers include entitites with which Western has long-term firm contracts, including PacifiCorp, Portland General Electric, City of Tacoma, and Longview Fibre Corporation. Power from Northwest suppliers is transmitted to California over the Pacific Northwest-Pacific Southwest Intertie Project and the California-Oregon Transmission Project (COTP). Western also purchases short-term non-firm energy on the open, or spot, market. In FY 1993, Western and PG&E settled a long-standing dispute over capacity and its cost to Western. PG&E was contractually committed to supply Western capacity to meet the 1,152 megawatt simultaneous peak-load level of Western's preference customers. A result of the settlement was the de-accrual of accounts payable to PG&E which were established each year in the past pending settlement of the lawsuit over capacity and a refund to Western from PG&E of overpayments to PG&E in previous years for capacity purchases. These actions resulted in $135.8 million of available funds to help finance Western's FY 1994 and FY 1995 purchase power and wheeling program.	Continue purchasing energy, capacity, and wheeling services to meet Western's contractual commitments. It is assumed that the customer loads experienced in FY 1994 will continue in FY 1995 and FY 1996. Water conditions are forecasted to improve in FY 1995; therefore, purchases are projected to be reduced in the Central Valley Project service territory to 4,788 GWh. However, this lower level of purchases will be offset by anticipated above-inflationary increases in the cost of power purchases in FY 1995. The contract energy rate for PacifiCorp power (representing almost 30 percent of Western's power purchases) increased more than 18.6 percent above FY 1994. This increase is due to "closing the gap" between below-cost power and actual-cost power. Western was paying below-cost rates during the early years of the contract, and in FY 1995 Western is required by contract to pay actual costs. Energy purchases from PG&E represent almost 40 percent of total power purchases. PG&E is not projecting that the exceptional geothermal and thermal energy production that occurred in FY 1994 will continue; therefore, rates will increase. About 57 percent of the total program will be financed through alternative financing.	Continue purchasing energy, capacity, and wheeling services from PG&E and small non-PG&E suppliers in California and from out-of-state suppliers to meet Western's contractual commitments. Total purchases are anticipated to be 4,390 GWh in FY 1996. This reflects continued improvement in generation and assumes customer loads will remain below the level Western is contractually committed to provide. However, the total funding request for the purchase power and wheeling program is projected to increase 5 percent between FY 1995 and FY 1996 due to increases in energy costs. Firm contract costs, which make up more than 60 percent of the program will increase between 1.3 and 5.3 percent. Non-firm purchases from northwest and instate suppliers have been balanced with purchases from Energy Bank Account No. 2 (EA2). The outstanding balance of the EA2 bank account is being reduced at a rate which minimizes costs and maximizes rate stability through year 2004. When this bank account balance is exhausted, purchase power expenses will rise substantially due to increased energy purchases made from the spot market at a rate higher than purchasing from EA2. Western's energy purchase estimates do not include impacts of the Central Valley Project Improvement Act because the requirements have not been

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III. Purchase Power and Wheeling (Cont'd):
Central Valley Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy, Wheeling, and Capacity Purchases (Cont'd)	Western applied $72 million of the settlement funds in FY 1994 and $63.8 million in FY 1995 to reduce the request for new budget authority. FY 1994 was a dry year, with the fourth driest inflow in history. The lack of generation was somewhat offset by lower than expected customer loads, resulting in 5,506 GWh of purchases. Fortunately, energy prices, particularly from PG&E, were favorable. PG&E's energy rate was low primarily due to above-forecasted generation from PG&E's low-cost geothermal facilities and an exceptional plant factor at PG&E's Diablo Canyon nuclear powerplant. These reduced costs are being passed on to all rate payers, including Western. Appropriations ($ 89,406) Alt. Financing (104,554) --- Total Program ($193,960)	The Bureau of Reclamation is preparing an environmental impact statement to determine potential impacts on Central Valley Project pumping loads and generation in order to implement the Central Valley Project Improvement Act of 1992. Western's energy purchase estimates do not include power impacts of the Improvement Act because the requirements have not been determined. In FY 1994 PG&E filed a rate schedule change with the Federal Energy Regulatory Commission (FERC). This filing established cost-based rates for Western's withdrawals of energy from Energy Account No. 2 (EA2) during the period 1985-92. As a result of this change, a credit of $39.0 million will be applied on PG&E's energy bills to Western in FY 1994 and FY 1995. Western's FY 1995 request for new budget authority has been reduced accordingly by Congress. (Note that of this reduction, $37.7 million was taken in the purchase power and wheeling program, thereby, reducing the new budget authority request to $0. The remaining $1.3 million was taken in the construction and rehabilitation program). Appropriations ($ 88,959) Alt. Financing (117,841) --- Total Program ($206,800)	determined. Also, the estimates assume the Bureau of Reclamation will have completed the Shasta Dam temperature control device (TCD) early enough in FY 1996 to eliminate power purchases normally required during by-pass operations; however recent information indicates that the TCD will not be in service until FY 1997. Changes in the operation of the Central Valley Project or additional pumping requirements for environmental concerns could substantially impact the amount of generation available for marketing, and the amount of purchases required to meet contractual commitments. Of the $217.8 million total program, about 54 percent will be funded through alternative financing, including bill crediting, net billing, and reimbursable arrangements. (Note, a nonappropriation transfer is not planned with Bonneville Power Administration (BPA) because BPA does not have surplus energy available to sell to Western during periods when it could be used to support customer loads.) Western is nearing the upper limit on the alternative financing and must rely on appropriations to finance the balance of the total program. At this level of alternative financing ($117 million), Western is able to respond to many variables that affect purchase power and wheeling costs, such as changes in customer loads, fluctuating energy costs, and changes in project use which impacts available generation. Appropriations ($100,605) Alt. Financing (117,222) --- Total Program ($217,827)

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III. Purchase Power and Wheeling (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy, Wheeling, and Capacity Purchases (Cont'd)	$ 89,406	$ 88,959	$ 100,605
Subtotal, Central Valley Project	$ 89,406	$ 88,959	$ 100,605
Pick-Sloan Missouri Basin Program			
Energy and Wheeling Purchases	Purchased energy and wheeling services to meet power delivery obligations for the Pick-Sloan Missouri Basin Program, including the Fryingpan-Arkansas Project. Appropriations ($11,507) Alt. Financing (41,454) --------- Total Program ($52,961)	Continue purchasing energy and wheeling services to meet power delivery obligations for the Pick-Sloan Missouri Basin Program, including the Fryingpan-Arkansas Project. Alternative methods of financing fund 79 percent of Pick-Sloan's total program costs, with appropriations financing the remaining 21 percent. Appropriations ($11,582) Alt. Financing (42,753) --------- Total Program ($54,335)	The total program for the Pick-Sloan Missouri Basin Program, including the Fryingpan-Arkansas Project, will continue to decrease, based on forecasts of improved reservoir levels and normal inflow. Increased appropriations are requested to pay increased wheeling expenses. Western and Public Service Company of Colorado (PSCo) provide wheeling to customers within each of their service areas. PSCo has indicated it will increase its transmission rate by FY 1996 to transmit energy generated at the Mt. Elbert Powerplant to Western's transmission system. This customer will not participate in net billing arrangements; therefore, additional budget authority is needed. Alternative methods of financing will continue to provide about 72 percent of Pick-Sloan's total program costs, with appropriations financing the remaining 28 percent. Western is maximizing its use of alternative financing and has assumed significant responsibility to keep arrangements working successfully among Western, its customers, and its power suppliers to avoid increases to the appropriation request. Appropriations ($12,104) Alt. Financing (31,386)

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III. Purchase Power and Wheeling (Cont'd):
Pick-Sloan Missouri Basin Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Energy and Wheeling Purchases (Cont'd)			Total Program ($43,490)
	$ 11,507	$ 11,582	$ 12,104
Subtotal, Pick-Sloan Missouri Basin Program	$ 11,507	$ 11,582	$ 12,104
Other Projects			
Other Projects	Purchased energy for the Parker-Davis and Boulder Canyon Projects. Boulder Canyon Project obligations are financed from permanent budget authority. Appropriations ($4,047) Alt. Financing (0) Total Program ($4,047)	Continue purchasing energy for the Parker-Davis and Boulder Canyon Projects. Generation at Hoover, Parker, and Davis Powerplants continues to be restricted by ongoing environmental studies at the upstream Glen Canyon Dam. Western is working with its customers to enter into alternative financing arrangements such as bill crediting and energy banking to be effective in FY 1995. First-time use carries a high degree of risk because of uncertainty with obtaining customer participation. Bill crediting will allow Western to fulfill its contractual obligations for energy deliveries to customers in spite of restricted generation and budgetary resources. Appropriations ($4,480) Alt. Financing (1,500) Total Program ($5,980)	Continue purchasing energy for the Parker-Davis and Boulder Canyon Projects. Generation will continue to be restricted by changes in operation of upstream releases due to environmental concerns. In addition, power must be purchased on the open market rather than through previous interchange arrangements with the Glen Canyon Powerplant and Navajo Generating Station, which will result in increased costs. Over 60 percent of the Parker-Davis Project purchases will be financed using alternative financing arrangements, such as bill crediting and energy banking. This brings the percent of alternative financing for both projects to 22%. Appropriations ($5,466) Alt. financing (1,534) Total Program ($7,000)
	$ 4,047	$ 4,480	$ 5,466
Subtotal, Other Projects	$ 4,047	$ 4,480	$ 5,466
Purchase Power and Wheeling	$ 104,960	$ 105,021	$ 118,175

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

CONSTRUCTION, REHABILITATION, OPERATION AND MAINTENANCE ACCOUNT

1. **Preface:** Construction and Rehabilitation

Western plans, designs, and constructs facilities to enhance power system reliability and stability, and to ensure the delivery of power to customer delivery points. Western's construction activity primarily involves upgrading and rehabilitating the existing power system infrastructure to reduce outages and maintenance costs, and to improve overall operational efficiency. In FY 1996, Western's transmission system will have over 16,700 circuit miles of line with 259 substations. Western's ongoing multi-year modernization program assures Western's ability to operate a reliable, cost-effective power system. Annual replacement needs are based on condition of the facilities, availability of replacement parts, and technological advances. The average service life of facilities is 45 years for transmission lines, 35-40 years for substations, and 10-15 years for communications and other facilities. Studies are completed to address system needs for increased voltages and upgrade of lines and associated facilities to maximize system efficiency. Western will continue to be responsive to customers by facilitating system changes that are necessary for the reliable operation of the power transmission system. As an important part of this effort, Western will continue its leadership in planning for and constructing transmission facilities to support more widespread transmission access in support of the Energy Policy Act of 1992.

To the maximum extent possible, Western works with neighboring utilities to engage in jointly financed construction activities. By participating with other utilities on joint projects, Western is able to take advantage of existing facility sites and transmission line rights-of-way, achieve economy of scale by developing one large project in lieu of two or more smaller projects, improve environmental planning, enhance revenues from sales using the Federal power system, and reduce Federal appropriations.

Construction and rehabilitation activities take place within five power systems, which are described briefly below. (Note: statistics are as of the end of fiscal year 1994.)

Central Valley Power System

Customers of the Central Valley Power System are in central and northern California. The system includes 852 circuit miles of high-voltage transmission lines and fifteen major substations. The ten powerplants have combined installed capability of 2,021 MW.

Parker-Davis Power System

The Parker-Davis Power System includes 1,475 circuit miles of high-voltage transmission lines and 29 substations in Arizona, southern Nevada, and along the Colorado River in California. The two powerplants have an installed capability of 338 MW.

Pacific Northwest-Pacific Southwest Intertie Project

The Pacific Northwest-Pacific Southwest Intertie Project consists of 763 circuit miles of high voltage transmission lines and three substations. This project is for wheeling purposes only and includes no powerplants. The project transmission lines extend from Oregon to California and from Nevada to Arizona.

Pick-Sloan Missouri Basin Power System

The Pick-Sloan Missouri Basin Power System includes 11,124 circuit miles of high-voltage transmission lines and 179 substations, and serves customers in North Dakota, South Dakota, Iowa, Minnesota, Missouri, Montana, Nebraska, Wyoming, Colorado, and Kansas. The 25 powerplants have an

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I. Construction and Rehabilitation (Cont'd)

installed capability of 3,431 MW. Transmission facilities of the Fort Peck Project in Montana are also integrated with the Pick-Sloan Missouri Basin Power System.

Colorado River Storage Power System

The Colorado River Storage Power System provides power to customers in Colorado, Utah, New Mexico, Arizona, and parts of southern California, Nevada, and Wyoming. There are 2,382 circuit miles of high-voltage transmission lines and 25 substations within this system. Installed capability of the seven powerplants is 1,802 MW.

The following activity descriptions depict construction and rehabilitation of facilities within these power systems. The preconstruction and construction work is divided into three subactivities for clarity: (1) Transmission Lines and Terminal Facilities; (2) Substations; and (3) Other Facilities, e.g., improvements at Western's maintenance centers and replacement of communication systems.

II. A. Summary Table: Construction and Rehabilitation

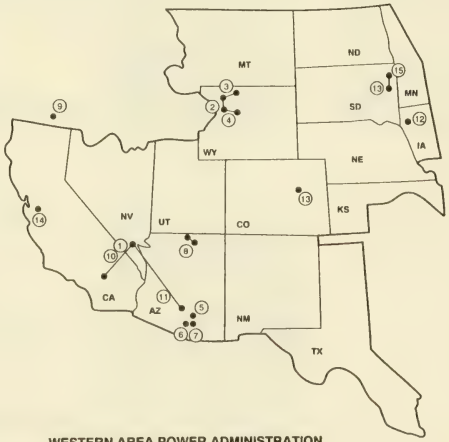
Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Transmission Lines and Terminal Facilities				
California-Oregon Transmission Project	$ 0	$ 0	$ 0	
Central Arizona Project Transmission Facilities	0	0	0	
Flanagan-Central Valley T. Line	0	0	0	
Miracle Mile T. Line Consolidation	203	0	0	
Casper Area Transmission Line Modifications	247	0	0	
Limestone-Gering-Bayard-McGrew 69-kV T.L.	1,724	0	0	
Fort Peck-Wolf Point 230-kV Trans. Line	678	111	0	
Sidney-North Yuma 230-kV T. Line	565	0	0	
Glen Canyon-Navajo Interconnection	99	2,145	2,355	
Mead-Phoenix Project	33,833	18,501	1,575	
Mead-Adelanto Project	4,060	5,145	1,048	
Adelanto-Lugo Project	51	750	2,159	
Carter Mountain-Thermopolis 230-kV T. Line	1,276	160	0	
Big Horn Project	295	2,149	911	
Watertown-Summit 115-kV Rebuild	4,929	256	0	
Big George-Carter Mountain 115-kV T. Line	731	2,435	0	
Craig-Bears Ears-Ault 345-kV T. Line	0	0	0	
Minor Construction Activities	540	2,043	2,762	
Preconstruction Activities	3,659	3,210	3,033	
Subtotal, Transmission Lines and Terminal Facilities	$ 52,890	$ 36,905	$ 13,843	$ -23,062
Substations				
Substations	$ 34,702	$ 36,405	$ 37,382	
Subtotal, Substations	$ 34,702	$ 36,405	$ 37,382	$ 977

II. A. Summary Table: Construction and Rehabilitation - Cont'd.

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Other				
Microwave Systems	$ 881	$ 2,826	$ 4,052	
Supervisory Control and Data Acquisition Systems	1,348	14,563	1,753	
New Melones Switchyard	773	0	0	
Phoenix Area Maintenance Complex	269	564	0	
Sacramento Area Dispatch Center	825	0	0	
Sacramento Operations Center	5,144	700	0	
Maintenance Facilities	3,175	7,457	5,591	
Misc. system replacements and additions	3,894	3,187	3,891	
Subtotal, Other	$ 16,309	$ 29,297	$ 15,287	$ -14,010
Total, Program	$ 103,901	$ 102,607	$ 66,512	$ -36,095
Unobligated Balances, Net	14,794	-12,995	-3,407	9,588
Total, Budget Authority	$ 118,695	$ 89,612	$ 63,105	$ -26,507
Planned Use of Prior Year Balances	+3,000	+3,271	+3,407	-136
Total, Construction and Rehabilitation	$ 121,695	$ 92,883	$ 66,512	$ -26,371

II. B. Laboratory and Facility Funding Table: Construction and Rehabilitation

All Other	$ 121,695	$ 92,883	$ 66,512	$ -26,371
Total, Construction and Rehabilitation	$ 121,695	$ 92,883	$ 66,512	$ -26,371



FACILITIES

1. Basic Substation, Stage 03
2. Big George-Carter Mountain 115-kV T.L.
3. Big Horn Project
4. Carter Mountain-Thermopolis, 230-kV T.L.
5. Coolidge Substation, Stage 07
6. ED2 Substation
7. ED4 Substation
8. Glen Canyon-Navajo Interconnection
9. Malin Series Capacitors
10. Mead-Adelanto Project
11. Mead-Phoenix Project
12. Sioux City Transformer Replacement
13. Supervisory Control and Data Acquisition Systems (Loveland, Colorado, and Watertown, South Dakota)
14. Tracy Substation, Stage 04
15. Watertown-Summit Rebuild

WESTERN AREA POWER ADMINISTRATION

FY 1996 MAJOR FACILITY CONSTRUCTION

III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Construction and Rehabilitation			
Transmission Lines and Terminal Facilities			
California-Oregon Transmission Project	The California-Oregon Transmission Project (COTP) was placed in service in March 1993. This 340 miles of 500-kV transmission line creates the third link in a long-distance AC-transmission system that stretches from the Columbia River Basin in Oregon to California allowing West Coast utilities to share each other's resources when electric demands peak in one area but are lower in another. Three miles of single-circuit line sections were converted to double circuit along the Elverta-Tracy No. 1 and 2 Transmission Lines, and a section of the Shasta-Tracy Transmission Line was abandoned, in accordance with the environmental mitigation agreement for COTP. Federal (0) Non-federal ($2,596) --- ($2,596) $ 0	No activity. $ 0	No activity. $ 0
Central Arizona Project Transmission Facilities	Construction of the Black Mountain-Del Bac Transmission Line will be accomplished under a reimbursable agreement with the Bureau of Reclamation. Federal DOE ($ 0) Federal non-DOE ($ 42) --- Total ($ 42) $ 0	Construction contract for the Black Mountain-Del Bac Tranmission Line will be awarded. Federal DOE ($ 0) Federal Non-DOE ($ 250) --- Total ($ 250) $ 0	Construction of the Black Mountain-Del Bac Transmission Line for the Bureau of Reclamation will be completed. Federal DOE ($ 0) Federal Non-DOE ($ 150) --- Total ($ 150) $ 0

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Flanagan-Central Valley T. Line	Planning and environmental work was initiated to build the 3.5 mile Flanagan-Central Valley 115-kV Transmission Line and terminal facilities. This second line will provide a backup connection to the City of Shasta Lake. Therefore, periodic transmission line maintenance and wood pole replacement can be accomplished without the loss of power to the City's customers. This project will be funded by the City of Shasta Lake. Federal ($ 0) Non-Federal ($ 56) Total ($ 56)	Construction contract for Flanagan-Central Valley Transmission Line and terminal facilities will be awarded. Federal ($ 0) Non-Federal ($2,361) Total ($2,361)	Construction of the Flanagan-Central Valley Transmission Line and terminal facilities will be completed. Federal ($ 0) Non-Federal ($2,919) Total ($2,919)
	$ 0	$ 0	$ 0
Miracle Mile T. Line Consolidation	Construction of the Miracle Mile Transmission Line Consolidation Project in Wyoming was completed. Obsolete equipment at existing Seminoe and Kortes Switchyards was replaced and relocated at the new Miracle Mile Substation.	No activity.	No activity.
	$ 203	$ 0	$ 0
Casper Area Transmission Line Modifications	About 55 miles of 115-kV, 69-kV, and 34.5-kV transmission lines were removed as part of the Casper Area Transmission Line Modifications.	No activity.	No activity.
	$ 247	$ 0	$ 0

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Limestone-Gering-Bayard-McGrew 69-kV T.L.	Replacement of 125 miles of the Limestone-Gering-Bayard-McGrew 69-kV Transmission Line was completed. The line structures had reached the end of their useful service life due to age and deteriorated conditions. Replacement of the line reduced the number of outages to customers and eliminated a potential hazard to maintenance crews and the general public. New overhead ground wires reduced the numerous lightning outages. This 69-kV line is initially being operated at 34.5-kV. The larger conductor provides more reliable service to customers because overloading and subsequent interruption of service are reduced. Power losses arel also reduced.	No activity.	No activity.
	$ 1,724	$ 0	$ 0
Fort Peck-Wolf Point 230-kV Trans. Line	Upgrade of the 60-mile Fort Peck-Wolf Point Transmission Line was near completion. This line replaced a line built in the 1940's which had reached the end of its useful service life and required frequent repairs. Maintenance had become more expensive and safety of maintenance personnel was a concern due to severe wood pole shell rot. The old line did not have overhead ground wires for protection against lightning strikes. As a result, outages were frequent. Replacing the 115-kV line with a line constructed at 230-kV standards will increase reliability and resolve operating problems at the Fort Peck Powerplant.	The Fort Peck-Wolf Point 230-kV Transmission Line will be completed.	No activity
	$ 678	$ 111	$ 0

III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Sidney-North Yuma 230-kV T. Line	Construction of the 80-mile Sidney-North Yuma Transmission Line from Sidney Substation in western Nebraska to North Yuma Substation in Colorado was completed. This was a joint participation project with Public Service Company of Colorado (PSCO) and Tri-State Generation and Transmission Association (Tri-State). Western and PSCO equally split the cost of the transmission line. Tri-State installed terminal facilities for the line at Sidney and North Yuma Substations. Joint construction of this project provided economy of scale, greater efficiency, and better use of limited land resources for transmission lines. Prior to construction of this line, portions of the transmission system in this area had to be operated in a manner that exceeded safe operating limits to serve summer peak loads, and loads were dropped during certain transmission facility outages. Also, power flows through the Virginia Smith Converter Station had to be cut back for certain line outages. This line provides the needed transfer capability in the area to eliminate these system operating deficiencies. Federal ($ 565) Non-Federal (762) --- Total ($1,327)	No activity.	No activity.
	$ 565	$ 0	$ 0

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Glen Canyon-Navajo Interconnection	Work on the Glen Canyon-Navajo Interconnection continued. This project will connect the jointly-owned Navajo coal-fired thermal powerplant and the Glen Canyon Federal hydropower plant in northern Arizona. These two plants, which are about 7 miles apart, were constructed in the mid 1970's and 1960's, respectively, and have been operated isolated from each other. Connecting these two systems would allow Western to take advantage of Federally-owned excess transmission capacity available in the Navajo Transmission System by providing access to the transmission paths south to Phoenix and west to the Mead, Nevada, area. Negotiations for participation continued. Federal ($ 99) Non-Federal ($ 0) Total ($ 99) $ 99	Long-lead-time equipment will be procured for the Glen Canyon-Navajo Interconnection. Direct access to both systems will provide opportunities for firming purchases, nonfirm sales, and interchange transactions. The reliability of the Arizona 345-kV and 500-kV transmission systems will be enhanced substantially because the two systems will support each other during outages. Federal ($ 2,145) Non-Federal ($ 4,355) Total ($ 6,500) $ 2,145	Construction will continue on the Glen Canyon-Navajo Interconnection. This interconnection will reduce overall Western Systems Coordinating Council system losses by up to 40 MW annually. Federal ($ 2,355) Non-Federal ($ 4,781) Total ($ 7,136) $ 2,355
Mead-Phoenix Project	FY 1994 was the peak construction year for the Mead-Phoenix Project. This project is jointly funded by 14 participants in the Southwest to provide needed transmission access and to eliminate the bottleneck for marketing existing surplus energy. The project consists of a 256-mile, 500-kV line from central Arizona to southern Nevada. Presently all existing transmission capacity from Arizona to southern Nevada is fully committed. As a result, surplus generation in Arizona is blocked from markets in Nevada and along the California border. In conjunction with the Mead-Adelanto and Adelanto-Lugo Projects, and	Western will continue to make progress payments to the Mead-Phoenix Project Manager for construction activity. The initial capacity of the project will be 1,300 MW; Western's share is 412 MW. Total estimated project cost is $278.3 million. (This estimate has been reduced by the Project Manager due to favorable award amounts for materials and construction contract.) Western's total cost is $96.7 million, including preliminary planning work incurred prior to signing participation agreements, and participation costs during the construction phase. The total estimated cost includes construction of the 500-kV Mead	The Mead-Phoenix Project will be placed in-service during the second quarter of FY 1996.

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Mead-Phoenix Project (Cont'd)	additional wheeling arrangements, a transmission path will be provided to take advantage of geographic and seasonal diversity between Western's Sacramento and Phoenix Areas. Surplus energy can be transferred to areas which are short generation. The Salt River Project is the Project Manager. Western made progress payments (in the form of monthly advances) to the Project Manager for construction activity.	terminal. Western is responsible for design and construction of this project feature.	
	$ 33,833	$ 18,501	$ 1,575
Mead-Adelanto Project	Western is a minority participant in the Mead-Adelanto Project. This project consists of about 202 miles of 500-kV transmission line from southern Nevada to southern California. This project will interconnect with the Mead-Phoenix Project at Marketplace Substation (near Mead Substation) and provide additional transmission capacity from Arizona to California for Western's customers in California. In conjunction with the Adelanto-Lugo Project and other wheeling arrangements, a transmission path will be provided between Western's Phoenix and Sacramento Areas to ensure capability to meet the needs of Western's customers through interregional transfers. Both areas experience surplus situations at different times. These interregional transfers are becoming extremely important because electric utility resource planning in the West is largely devoid of powerplant	The Mead-Adelanto Project is being jointly funded by participants including several municipal corporations of the State of California, the Los Angeles Department of Water and Power (LADWP), and Western. Total capacity of the project is 1,200 MW. Western's share is 100 MW. Total estimated cost is $286.5 million. Western's total cost is about $25.5 million, including planning costs incurred prior to signing the participation agreements, and participation costs during the construction phase. Western continued to make payments to the Project Manager, LADWP, for construction of the Mead-Adelanto Project.	The Mead-Adelanto Project will be placed in-service.

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Mead-Adelanto Project (Cont'd)	commitments through the end of the century due to changes in the economy, environmental activism, increasing fuel costs, and increased conservation. Electric utility interests in the Southwest have recognized the merits of interregional transmission, such as the Mead-Phoenix and Mead-Adelanto Projects, as viable resource planning alternatives to building new generation (such as nonrenewable oil- and gas-fired generation.)		
	$ 4,060	$ 5,145	$ 1,048
Adelanto-Lugo Project	The Adelanto-Lugo Project interconnects the Los Angeles Department of Water and Power's Adelanto Substation and Southern California Edison Company's Lugo Substation in California. This interconnection between the Adelanto and Lugo Substations (and other wheeling arrangements) will be the final link to provide a transmission path from Arizona to southern Nevada (Mead-Phoenix Project), to southern California (Mead-Adelanto Project), and to northern California (Adelanto-Lugo Project). A continuous Federal path will enable Western to meet the needs of its customers more efficiently and economically through interregional transfers and seasonal diversity exchanges. Negotiation of the participation agreement among the 11 participants in the Adelanto-Lugo Project continued.	The Public Power Agency of Modesto, Santa Clara, and Redding is the Project Manager during the planning stage of the Adelanto-Lugo Project. Final participation agreements will be signed and final design initiated.	Western will continue to make progress payments to the Project Manager for construction of the Adelanto-Lugo Project. The total capacity of the line will be 1345 MW. Western's share will be 100 MW. Total construction cost of the project is $57.1 million. Western's total cost is $4.9 million.
	$ 51	$ 750	$ 2,159

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Carter Mountain-Thermopolis 230-kV T. Line	Construction of the 42-mile Carter Mountain-Thermopolis Transmission Line was substantially completed. Replacement of this line will prevent overloads and resulting customer service interruptions when area loads rise above the capacity of the existing conductor. With the larger conductor, power losses will be reduced. The line structures, which were over 50 years old, had reached the end of their useful service life due to age and deteriorated conditions. Replacement of this line eliminated a hazard to maintenance crews and the general public.	Final as-built drawings and minor activites for the Carter Mountain-Thermopolis Transmission Line will be completed.	No activity
	$ 1,276	$ 160	$ 0
Big Horn Project	The Big Horn area transmission system was planned and constructed in 1940. Over the last 50 years, hydropower resources and Federal allocations have increased. This system can no longer meet current reliability standards set by Western Systems Coordinating Council (WSCC). WSCC criteria have become more stringent over the years because of consumer use of more sensitive electronic equipment that is prone to damage and malfunction due to unusual power system events. Outages in the Big Horn Basin region of Wyoming cause low voltages and overloaded transformers, which reduce the quality of power to Western's customers and adjacent utilities, and violate operating and reliability criteria. To correct this condition, the Big Horn	The Big Horn Project includes upgrade of substation equipment at the following terminals: Big George, North Cody, Lovell, Garland, and Carter Mountain Substations. In addition, oil spill containment will be installed at the terminal facilities. This project will be a joint participation project with Tri-State Generation and Transmission Association, Inc. and Wyoming Municipal Power Agency. As participants, their contribution to the project will be replacement of equipment in their respective substations (in the amount of $2.0 million). Design will be completed and construction contracts awarded.	Construction of the Big Horn Project will be completed. Substation equipment will be upgraded and oil spill containment will be installed at the terminal facilities.

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Big Horn Project (Cont'd)	Study Group initially recommended 115-kV operation of the existing Lovell-North Cody Transmission Line (which is presently operated at 69-kV), and construction of a 115-kV line between North Cody and Big George Substations. As the final system studies were completed, the study group decided that modifications at the various terminals within the system would resolve the low voltage and overload conditions, without construction of the Lovell-North Cody and North Cody-Big George Lines. This reduced the cost of the total project, but also delayed award of the contract.		
	$ 295	$ 2,149	$ 911
Watertown-Summit 115-kV Rebuild	Rebuild of the 30-mile Watertown-Summit Transmission Line was initiated. This line was built in 1953. During an ice storm in 1965, 63 percent of the line was replaced under adverse conditions using surplus and previously-used poles and hardware. The conductor and overhead wires were spliced in many places. Subsequent ice storms and extensive shell rot have deteriorated the entire line. This poses a safety hazard to the general public traveling along roads under line crossings and to personnel who maintain the line. Replacement of the line will minimize interruption of service to customers and assure a safe working environment for maintenance crews.	Rebuild of the Watertown-Summit Transmission Line in northeastern South Dakota will be completed.	No activity
	$ 4,929	$ 256	$ 0

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III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Big George-Carter Mountain 115-kV T. Line	The 28-mile Big George-Carter Mountain Transmission Line in Wyoming must be rebuilt. The line was built in 1941 and over 94 percent of the poles are hazardous to climb due to shell rot. Also, the line lacks an overhead ground wire which offers protection against lightning strikes and subsequent outages. Design and right-of-way acquisition will be completed.	Customers served by the Big George-Carter Mountain Transmission Line have voiced considerable complaints about the reliability of the line. Most of the loads served by this line are oil pumps which have to be manually restarted and are subject to damage whenever an outage occurs. This line has the worst reliability of all Western 69-kV lines in the Loveland Area Office control area. Rebuilding of the 28-mile Big George-Carter Moutain Transmission Line will be completed.	No activity.
	$ 731	$ 2,435	$ 0
Craig-Bears Ears-Ault 345-kV T. Line	$ 0	$ 0	$ 0
Minor Construction Activities	Repair of transmission lines in Nebraska and Wyoming was completed. Other than the conductor damage along these 115-kV transmission lines, these lines are in good condition. The most economical alternative is to repair the damaged conductor by installing spiral wrap full tension splices. Other minor work includes access roads along the Blue Mesa-Curecanti-Salida, Curecanti-Shiprock, and Hayden-Gore Transmission Lines. Federal ($540) Non-Federal (379) Total ($919)	Minor construction activities, such as those described below, will continue. Reconductoring of transmission lines will continue. A small section of the Devils Lake Transmission Line in North Dakota will be rerouted to avoid a trailer court. Two miles of the Gering-Stegall Transmission Line will be realigned in FY 1996 so that no homes will be directly under the new line. However, there will be nine homes that will fall within the new right-of-way. These nine homeowners will be offered relocation in FY 1995. A 2-mile 69-kV tap line will be constructed to intercept the remaining part of Western's former Shasta-Tracy transmission line. A 69-kV line bay at Tracy Substation will be constructed to provide a path for power to serve Contra Costa Water District (CCWD) near Los Vaqueros Intake Pumping Plant. This	Minor construction activities, such as those described below, will continue. The existing Gering-Stegall Tranmission Line will be realigned so that no homes will be directly under the new line. About 2.5 miles of existing Weld-Windsor 115-kV line will be replaced with a double-circuit line. This project is being completed by Western and the Public Service Company of Colorado. Western's line requires reconductoring due to excessive damages and Public Service needs a new line. By joining together, the two utilities will make better use of an existing right-of-way, reduce environmental impacts, and reduce costs. Three miles of wood poles, which are badly deteriorated, will be replaced with single steel poles along the Oracle-Tuscon 115-kV Transmission Line.

III. Construction and Rehabilitation (Cont'd):
Transmission Lines and Terminal Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Minor Construction Activities (Cont'd)		construction will be funded by CCWD. Federal ($2,043) Non-Federal (3,171) ------ Total ($5,214)	Federal ($2,762) Non-Federal (1,254) ------- Total ($4,016)
	$ 540	$ 2,043	$ 2,762
Preconstruction Activities	Preconstruction activities were performed for various transmission line additions and upgrades, such as Weld-Windsor 115-kV Transmission Line (Colorado), Custer-Broadview 230-kV Transmission Line (Montana), and Mead-Basic No. 2 (Nevada). Western continued to work with the Navajo Nation to conduct environmental studies for a project to alleviate the bottleneck in the Four Corners Area. Federal ($3,659) Non-Federal (164) ------- Total ($3,823)	Planning, design, environmental clearances, and other preconstruction activities will be performed for various transmission line replacements, additions and upgrades, such as the Custer-Broadview 230-kV Transmission Line (Montana) and Mead-Basic No. 2 (Nevada). Western will continue to work with the Navajo Nation to develop a project to alleviate the bottleneck in the Four Corners Area, using non-Western funding. Federal ($ 3,210) Non-Federal (7,349) ------- Total ($10,559)	Planning, design, environmental clearances, and other preconstruction activities will be performed for various transmission line replacements, additions and upgrades, such as Custer-Broadview 230-kV Transmission Line (Montana) and Mead-Basic No. 2 (Nevada). Western will continue to work with the Navajo Nation to develop a project to alleviate the bottleneck in the Four Corners Area, if non-Western funding is provided to the agency. Federal ($ 3,033) Non-Federal (8,442) ------- Total ($11,475)
	$ 3,659	$ 3,210	$ 3,033
Subtotal, Transmission Lines and Terminal Facilities	$ 52,890	$ 36,905	$ 13,843

III. Construction and Rehabilitation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Substations			
Substations	Basic Substation, Nevada, is over 50 years old. The concrete foundations are deteriorating and pollutant cleanup is required. Because of highly corrosive gases often present in the area, maintenance is very costly. The 13.8-kV section of the substation is extremely congested with switchgear and buswork. Western continued to work with customers at Basic Substation in a joint effort to complete final design and specifications that will best benefit Western and the customers. ($723)	Construction will be initiated for Basic Substation 03. The existing substation will be replaced to improve safety, reliability, and maintainability. ($4,000)	Construction will be completed for Basic Substation 03. ($932)
	Construction of the Coolidge Substation 07, Arizona, was initiated. Over the last 36 years, the switchyard has been modified to meet the growing needs of the system around it. There is now a need to modernize for improved safety, reliability, and maintainability of the substation.($2,558)	Construction of the Coolidge Substation 07 will be near completion. ($1,041)	Construction will be completed for Coolidge Substation 07. ($642)
	Construction contract was awarded for Tracy Substation 04, California, for replacing transformers, line relays, control boards, fault recorders, and communication equipment. This equipment is over 50 years old and must be replaced to bring the station up to present requirements and to increase station reliability. ($7,567)	Construction will continue for Tracy Substation 04. In addition to replacing old equipment, a new control room at this substation consolidates 69-kV, 230-kV, and 500-kV operation, including operation of the California-Oregon Transmission Project. ($1,237)	Construction of Tracy Substation 04 will be completed. ($663)
	Installation of circuit breakers and other equipment at Mead Substation 05, in southern Nevada, continued. The existing breakers are near overload due to the system expansion at this substation. ($2,070)	Installation of circuit breakers and other equipment at Mead Substation 05 will be completed. ($716)	No activity. ($0)

III. Construction and Rehabilitation (Cont'd):
Substations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Substations (Cont'd)			
	ED2 and ED4 Substations (Arizona) are over 40 years old. The equipment is approaching the end of its projected service life and requires correction of a number of deficiencies in order to maintain safe and reliable operations. ($ 97)	Final design and equipment purchases will be made for replacement of transformers, circuit breakers, bus circuit switchers, and other equipment at ED2 and ED4 Substations. ($1,348)	Construction contracts will be awarded for installation of replacement equipment at ED2 and ED4 Substations. ($5,136)
	Replacement equipment (circuit breakers, reactors, and instrument transformers) were procured for the Sioux City Substation. The existing transformers have deteriorated and are overloading, which has actually caused oil to boil out of the pressure relief valves. This overloading resulted in internal damage that is causing considerable maintenance (oil must be reclaimed) to keep the transformers operational. ($1,485)	Construction contract for replacement of the Sioux City transformers will be awarded. ($2,168)	Replacement of the Sioux City transformers will be completed. ($457)
	Work continued or began to improve safety, reliability, and maintainability at the following sites during FY 1994: remove Mesa Substation 03 (Arizona) after all equipment was relocated at Roger Substation; replace power transformers, circuit breakers, and fuses at Akron, Sterling 08, Woodrow 02, and Glendo Substations (Colorado); replace circuit breakers and add a control building at Flatiron Switchyard 02 (Colorado); replace 53-year-old facility at Fort Morgan West 01 (Colorado) and relocate out of flood plain; replace the Wolf Point Substation 02 (Montana); replace, due to age and PCB contamination, Western-owned series capacitors at Malin Substation (Oregon); replace shunt reactor breakers at Mead 06 (Nevada); replace breakers, control	In FY 1995, work will continue or begin at the following sites to improve safety, reliability, and maintainability: replace power transformers, circuit breakers and fuses at Sterling 08, Woodrow 02, Flatiron Switchyard 02, Glendo 05, and Brighton 03 Substations (Colorado); under co-sponsored funding, build McConnico 01 (Arizona); replace transformer at Hayden (Colorado); replace breakers at Archer (Wyoming); provide oil spill containment at Blue Mesa Switchyard 03 (Colorado); add 345-kV circuit breakers at Four Corners Switchyard (New Mexico); replace due to age and PCB-contamination Western-owned series capacitors at Malin Substation (Oregon); replace shunt reactor breakers at Mead Substation 06 (Nevada); replace breakers, control	In FY 1996, work will continue or begin at the following sites to improve safety, reliability, and maintainability: equipment additions and replacements at Parker, Davis, and Maricopa Substations (Arizona), and Summit Substation (North Dakota); replacement of power transformers, circuit breakers and other equipment at Kimball (Nebraska), Limestone (Wyoming), and Brighton 03 (Colorado); provide oil containment at Blue Mesa Switchyard 03 (Colorado); replace transformers at Casa Grande (Arizona), Hayden (Arizona), and Rifle (Colorado); add 345-kV circuit breakers at Four Corners Switchyard (New Mexico); replace due to age and PCB-contamination Western-owned series capacitors at Malin Substation (Oregon); replace high voltage

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III. Construction and Rehabilitation (Cont'd):
Substations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Substations (Cont'd)	building, cables, and control boards at Rugby 04 and Williston 06 (North Dakota); under reimbursable funding, build Kofa (Arizona) to meet the needs of the Yuma proving ground; replace substation equipment at Pierre 07 (South Dakota) and Shiprock 06 (New Mexico); install Watertown Static Var System (South Dakota) to regulate voltage; upgrade Flaming Gorge Switchyard 03 (Utah); and remove equipment at Laramie 02 (Wyoming). Preconstruction activities continued at several substations, primarily to replace substation equipment due to age and obsolete parts. Preconstruction activities include engineering studies, environmental work, design, specifications, land or rights, equipment purchases, and power facilities development activities. Federal ($20,202) Non-Federal (3,058) Total ($23,260)	building, cables, and control boards at Rugby 04 and Williston 06 Substations (North Dakota); under reimbursable funding, build Kofa (Arizona) to meet the needs of the Yuma proving ground; upgrade Flaming Gorge Switchyard 03 (Utah); replace transformers and add oil spill containment at Casper (Wyoming); and remove equipment at Laramie 02 (Wyoming). Preconstruction activities will be ongoing at several substations. Federal ($25,895) Non-Federal ($ 6,128) Total ($32,023)	equipment such as circuit breakers, reactors, and instrument transformers at Denison 08 (Iowa) and Huron 14 (South Dakota); replace transformers and fuses at Derby Hill, Loveland, Holyoke and Wray, and Granby 02 (Colorado); replace breakers, control building, cables, and control boards at Williston Substation (North Dakota); and remove shunt capacitors at Frenchman Creek (Colorado). Preconstruction activities will be ongoing at many substations. Federal ($29,552) Non-Federal ($ 3,068) Total ($32,620)
	$ 34,702	$ 36,405	$ 37,382
Subtotal, Substations	$ 34,702	$ 36,405	$ 37,382

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III. Construction and Rehabilitation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Other			
Microwave Systems	Presently the microwave system in the Parker-Davis Project is jointly used by Western and the Bureau of Reclamation. In order to support data speeds higher than 9600 bits per second required for Hoover Dam control of Davis and Parker Dams, this system must be upgraded to a digital microwave system. The existing microwave equipment is beyond the normal replacement period and replacement parts are not available. Design was completed. Fiber optics were added to sections of the Central Valley Project to provide a second pathway for microwave communications.	The construction contract for buildings and towers for the microwave system in the Parker-Davis Project will be awarded. The new Sacramento Area Dispatch Center will be connected to the Sacramento microwave system, including fiber optics. Addition of the Tracy Substation to the southern San Joaquin Valley microwave will be initiated. This communication system will provide circuits for critical operational functions such as control and data acquisition, revenue metering data, and mobile radio interconnections. Planning, environmental, and design activities will be completed for additions to the existing microwave system in South Dakota. Various additions to the Colorado River Storage Project microwave system will be completed. These system additions replace present leased telephone lines with lower-cost microwave paths and increase the reliability of the communication system.	Work will continue on the microwave systems in the Parker-Davis Project and Pick-Sloan Missouri Basin Program in South Dakota. The previously constructed backbone microwave system in South Dakota incorporated communications to the most vital and important substation facilities. The proposed additions will provide reliable communications to smaller substations that had not been previously included. In addition, a backup path is planned to the Watertown Operations Office. This office is the focal point for communications for the power system in the Eastern Division of the Pick-Sloan Missouri Basin Program. These communications are presently dependent on a single antenna tower.
	$ 881	$ 2,826	$ 4,052

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III. Construction and Rehabilitation (Cont'd):
Other (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Supervisory Control and Data Acquisition Systems	Work continued on the link between the Phoenix and Salt Lake City dispatch centers. Installation of a replacement SCADA system for the Sacramento Area was near completion. Phoenix Area SCADA system was delivered and installation initiated. Procurement of the SCADA systems continued for the Billings and Loveland Areas of the Pick-Sloan Missouri Basin Program. The two systems will be requisitioned under a joint procurement concept to save costs. The contract award has been delayed to FY 1995.	Work on the link between the Phoenix and Salt Lake City Dispatch centers will continue. Installation of the Phoenix Area SCADA will be completed. Contract will be awarded for the Pick-Sloan Missouri Basin Program SCADA systems, using carryover funds from FY 1995. These existing systems must be replaced before equipment obsolescence and spare parts availability cause a degradation of power system reliability.	Work on the link between the Phoenix and Salt Lake City Dispatch centers will be completed. Installation of the Billings and Loveland SCADA systems will be near completion.
	$ 1,348	$ 14,563	$ 1,753
New Melones Switchyard	Final commissioning was completed at the New Melones control building.	No activity.	No activity.
	$ 773	$ 0	$ 0
Phoenix Area Maintenance Complex	Minor changes, including several safety items identified after construction, were completed.	The old dispatch building will be demolished and final landscaping and parking facilities will be completed.	No activity.
	$ 269	$ 564	$ 0
Sacramento Area Dispatch Center	Construction of the Sacramento Area Dispatch Center was completed. This facility provides a more efficient and functional dispatch center for the Sacramento Area, reduces space costs, provides space for the replacement SCADA system, and eliminates security concerns associated with the present control center.	No activity.	No activity.
	$ 825	$ 0	$ 0

III. Construction and Rehabilitation (Cont'd):
Other (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Sacramento Operations Center	The construction contract was awarded for the Sacramento Area Operations Center. This facility is located near Folsom Dam next to the Sacramento Dispatch Center to co-locate the dispatch and operation and maintenance staff with the power marketing, engineering, computer support and administrative staff. Consolidation of the entire technical and support staff near the dispatch center improves day-to-day operations, communication, and coordination.	Construction of the Sacramento Operations Center will be completed. The current space lease expires in January 1995.	No activity.
	$ 5,144	$ 700	$ 0
Maintenance Facilities	Increased power system responsibilities at Mead (Nevada) have crowded existing facilities. Construction of the Mead Maintenance Facility was initiated. Minor additions, such as garages and maintenance buildings for additional crew quarters, shop, and work space at Sioux City (Iowa), Miles City (Montana), Montrose (Colorado), Rapid City (South Dakota) and Philip (South Dakota) maintenance facilities were completed.	Construction of an additional building at the Brush (Colorado) Field Office will be initiated. This field office is currently short 3,660 square feet of space. As a result, equipment is stored outside and is subject to deterioration due to exposure and theft. This building will provide vehicle and equipment storage and shop space for the electricians and linemen. Construction will also be initiated for storage buildings and shops at Gering Service Center (Nebraska), Redding (California), and Devils Lake (North Dakota). Additional storage building space is required to house vehicles (such as manlifts), electrical equipment, and supplies. Fire protection (automatic sprinklers, fire detection and alarm systems, fire hydrants, preaction sprinklers, and carbon dioxide systems) will be installed in eight office buildings within the Loveland Area to minimize the fire hazard to Western employees and property.	Construction of the Gering Service Center and Brush Field Office will be complete. Additional storage for housing vehicles, electrical equipment, and supplies are needed at Devils Lake and Fargo, North Dakota, and Armour, South Dakota. These new additions will provide indoor storage space and garage space for motor vehicles and electrical equipment, which are currently subjected to severe weather conditions and subsequent deterioration. Outdoor storage area will be provided for poles and conductors. Installation of fire protection will continue in the Loveland Area of the Pick-Sloan Missouri Basin Program. Additions, modifications, or expansions of shops, vehicle storage, equipment storage, and outdoor storage yards will be initiated at Olinda, Elverta, Tracy, and Redding (California). The workload of the Central Valley Project maintenance crews has increased due to

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III. Construction and Rehabilitation (Cont'd):
Other (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Maintenance Facilities (Cont'd)			additions to the system, such as the 500-kV California-Oregon Transmission Project and future interconnections, with the cities of Roseville, Shasta Lake, and Modesto. Additional personnel have been employed to perform these added duties. The increase in crew size and new equipment has exceeded the capacity of the existing maintenance facilities and warehousing for storage of spare parts and vehicles. COTP participants will finance 50 percent of the cost of the Olinda Shop and Warehouse. Federal ($5,591) Non-Federal (775) Total ($6,366)
Misc. system replacements and additions	$ 3,175 Western continued to acquire and install miscellaneous equipment. Activities included replacing wood poles that have failed inspection along 165 miles of transmission lines in the Western Division of the Pick-Sloan Missouri Basin Program, metering equipment in the Central Valley Project, substation relay equipment for the Colorado River Storage Project, and Computer-Aided-Engineering (CAE) equipment. This CAE equipment is used for design of all facilities and final drawings. This is a rapidly changing technology. (Equipment of this type typically has a service life of 6 to 8 years.) The company that furnished the operating system for Western's first CAE system no longer supports the system. To maintain industry standards	$ 7,457 Western will continue to acquire and install miscellaneous equipment. Activities include replacing wood poles that have failed inspection along 85 miles of transmission lines in the Western Division of the Pick-Sloan Missouri Basin Program, metering equipment in the Central Valley Project, telecommunications facilities for the Western Division of Pick-Sloan Missouri Basin Program, CAE equipment for design and system studies, relay testing equipment, and a real-time digital power system simulator. The main function of this piece of equipment is to simulate the actual power system to test relays. Design and/or operating problems are identified before the relays are placed in service to assure no power outages	$ 5,591 Western will continue to acquire and install miscellaneous equipment, such as metering equipment and CAE equipment for design and system studies. ($1,019) Activities also include award of a contract to replace wood poles that have failed inspection along 430 miles of line in the Western Division of the Pick-Sloan Missouri Basin Program. ($2,872)

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III. Construction and Rehabilitation (Cont'd):
Other (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Misc. system replacements and additions (Cont'd)	in design, the system must be replaced.	will result because of improperly set relays.	
	$ 3,894	$ 3,187	$ 3,891
Subtotal, Other	$ 16,309	$ 29,297	$ 15,287
Construction and Rehabilitation	$ 103,901	$ 102,607	$ 66,512

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

CONSTRUCTION, REHABILITATION, OPERATION & MAINTENANCE ACCOUNT

I. Preface: Utah Mitigation and Conservation

The Reclamation Projects Authorization and Adjustment Act of 1992, Title III--Fish, Wildlife, and Recreation Mitigation and Conservation, provided for the establishment of the Utah Reclamation Mitigation and Conservation Commission. Under Title IV of this Act, the Utah Reclamation Mitigation and Conservation Account was established in the Treasury of the United States. The purpose of this account is to ensure that the level of environmental protection, mitigation, and enhancement achieved in connection with projects identified in the Act and elsewhere in the Colorado River Storage Project in the State of Utah is preserved and maintained. The State of Utah and the Administrator of Western Area Power Administration (Western) are authorized to deposit funds into the account. Such expenditures are to be considered nonreimbursable and nonreturnable.

II.A. Summary Table: Utah Mitigation and Conservation

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Utah Mitigation and Conservation.....	$ 5,000	$ 5,135	$ 5,283	$ 148
Total, Utah Mitigation and Conservation	$ 5,000	$ 5,135	$ 5,283	$ 148

II.B. Laboratory and Facility Funding Table: Utah Mitigation and Conservation

All Other	$ 5,000	$ 5,135	$ 5,283	$ 148
Total, Utah Mitigation and Conservation	$ 5,000	$ 5,135	$ 5,283	$ 148

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Utah Mitigation and Conservation	The Administrator, Western Area Power Administration, will deposit $5,000,000 into the Utah Reclamation Mitigation and Conservation Account.	The Administrator, Western Area Power Administration, will deposit $5,135,000 into the Utah Reclamation Mitigation and Conservation Account.	The Administrator, Western Area Power Administration, will deposit $5,283,000 into the Utah Reclamation Mitigation and Conservation Account.
	$5,000	$5,135	$5,283
Utah Mitigation and Conservation	$5,000	$5,135	$5,283

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Falcon and Amistad Operation and Maintenance Fund,
Western Area Power Administration

For operation, maintenance, and emergency costs for the hydroelectric facilities at the Falcon and Amistad Dams, $1,000,000, to remain available until expended and to be derived from the Falcon and Amistad Operating and Maintenance Fund of the Western Area Power Administration, as provided in section 423(c) of the Foreign Relations Authorization Act, Fiscal Years 1994 and 1995.

EXPLANATION OF CHANGE

FY 1996 is the initial year for Western to request appropriation for operation, maintenance, (O&M) and emergency costs of the hydroelectric facilities of the IBWC's Falcon and Amistad Dams. Funds for the O&M of these facilities were previously included in appropriation requests of the Department of State.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

LEAD TABLE

FALCON AND AMISTAD MAINTENANCE FUND

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Falcon and Amistad Maintenance Operating Expenses	$ 0	$ 0	$ 0	$ 0	$ 1,000
Total Program	$ 0	$ 0	$ 0	$ 0	$ 1,000

Authorizations:
P.L. 103-236, "Foreign Relations Authorization Act, Fiscal Years 1994 and 1995".

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

FALCON AND AMISTAD MAINTENANCE FUND

FY 1995 Obligational Authority Request.	$ 0
- Amendment	0
FY 1995 Amended Obligational Authority Request.	$ 0
- Planned Use of Prior Year Balances -	0
FY 1995 Non-comparable.	$ 0
FY 1996 Major Program Changes	
- FY 1996 is the initial year for Western to request spending authority for operation, maintenance (O&M) and emergency costs of the hydroelectric facilities of the International Boundary and Water Commission's Falcon and Amistad Dams. Funds for the O&M of these facilities were previously included in appropriation requests of the Department of State.	$ +1,000
FY 1996 Congressional Budget Request.	$ 1,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

FALCON AND AMISTAD MAINTENANCE FUND

I. Preface: Falcon and Amistad Maintenance Fund

The Foreign Relations Authorization Act, Fiscal Years 1994 and 1995, directed that a separate fund, known as the Falcon and Amistad Operating and Maintenance Fund (Maintenance Fund), be created in the Treasury of the United States. The Maintenance Fund will be administered by the Administrator of the Western Area Power Administration (Western) for use by the Commissioner of the United States Section of the International Boundary and Water Commission (IBWC) to defray operation, maintenance (O&M), and emergency costs for the hydroelectric facilities at the Falcon and Amistad Dams. All revenues collected in connection with the disposition of electric power generated at the Falcon and Amistad Dams, except monies received from the Government of Mexico, shall be credited to the Maintenance Fund and shall remain available until expended for defraying operation, maintenance and emergency costs for the hydroelectric facilities at the dams to the extent such amounts are provided in advance in appropriation acts. Monies received from the Government of Mexico for any energy which might be delivered to that Government by the IBWC shall be credited to the general fund of the Treasury of the United States. Most of the funds will be made available to the United States' Section of the International Boundary and Water Commission through a reimbursable agreement. Prior to FY 1996, the funds required for the O&M activities of the Falcon and Amistad Dams were included in appropriation requests of the Department of State.

II.A. Summary Table: Falcon and Amistad Maintenance Fund

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Falcon and Amistad Maintenance Fund	$ 0	$ 0	$ 1,000	$ 1,000
Total, Falcon and Amistad Maintenance Fund	$ 0	$ 0	$ 1,000	$ 1,000

II.B. Laboratory and Facility Funding Table: Falcon and Amistad Maintenance Fund

All Other.....	$ 0	$ 0	$ 1,000	$ 1,000
Total, Falcon and Amistad Maintenance Fund	$ 0	$ 0	$ 1,000	$ 1,000

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Falcon and Amistad Maintenance	No activity.	No activity.	This request covers the day-to-day operation and maintenance of the hydroelectric facilities of the U.S. Section of the International Boundary and Water Commission (IBWC) located at Falcon and Amistad (Texas) dams. Services provided will include 24-hour operation of two powerplants with a combined generating capacity of 97.5 megawatts to ensure response to ever-changing water conditions, customer demand, and continual coordination with operating personnel of the Government of Mexico. The work will be performed principally by Federal employees, who will continue to be allocated to IBWC by the Department of State. The Foreign Relations Appropriation Act, Fiscal Years 1994 and 1995, directs that operation, maintenance and emergency work at Falcon and Amistad Dams will be totally funded from revenues realized from sale of power from the facilities. However, no funds may be expended unless first included in appropriation acts. This request includes funds for an emergency reserve not to exceed $200,000. In the event no emergency occurs in FY 1996, those funds would carry forward and continue to provide an emergency reserve in subsequent years.
	$ 0	$ 0	$1,000
Falcon and Amistad Maintenance	$ 0	$ 0	$1,000

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

LEAD TABLE
COLORADO RIVER BASINS POWER MARKETING FUND

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Colorado River Basins Fund Operating Expenses	$ 124,065	$ 127,316	0	$ 127,316	$ 129,414
Total Program	$ 124,065	$ 127,316	0	$ 127,316	$ 129,414
Staffing (FTEs)	215	209	209	209	208

Authorizations:
P.L. 75-529, "The Fort Peck Project Act of 1938"
P.L. 84-484, "The Colorado River Storage Project Act of 1956"
P.L. 90-537, "The Colorado River Basin Project Act of 1968" (NAVAJO)
P.L. 95-91, "Department of Energy Organization Act" (1977)

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

COLORADO RIVER BASINS POWER MARKETING FUND

FY 1995 Obligational Authority Request.	$127,316
- Amendment -	0
FY 1995 Amended Obligational Authority Request.	$127,316
- Planned Use of Prior Year Balances -	+ 0
FY 1995 Non-comparable.	$127,316
FY 1996 Major Program Changes	
- Additional power purchases due to environmental constraints and increased cost of basic supplies, equipment, and stock items, such as crossarms, insulators, minor electrical equipment, and parts.	$ +2,098
FY 1996 Congressional Budget Request.	$129,414

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

COLORADO RIVER BASINS POWER MARKETING FUND

I. Preface: Colorado River Basins Fund

The Colorado River Basins Power Marketing Fund is the Western Area Power Administration's (Western) business-type revolving fund (Federal Enterprise Fund). Major activities associated with this revolving fund consist of power marketing and routine operation and maintenance of three power system transmission facilities. These three systems are the Colorado River Storage Project; the Fort Peck Project in Montana; and the Colorado River Basin Project in Arizona, including the Central Arizona Project and the United States entitlement from the Navajo coal-fired powerplant near Page, Arizona. Revenues from the sale of electric energy and capacity replenish the fund and are available for expenditure for operation, maintenance, power billing and collection, purchase power and wheeling, interest, emergencies, and other power marketing expenses. Power sales and other revenues, which are collected in excess of expenses, are used for repayment of investments to the Treasury. Each fiscal year's request is for obligational authority only, and represents Western's estimate of obligations to finance these business-type operations. Permanent budget authority was granted in each power projects' substantive legislation. As a result, budget authority is always available and does not require annual congressional appropriation action.

Approximately 38 percent of the FY 1996 expense program is for power purchases. Western requests obligational authority for purchase power to meet firm energy needs in the event of below-normal hydropower generation. During years of normal or above-normal hydropower generation, actual expenses may be less than the requested obligational authority because Western is able to meet most of its firm power contractual needs from hydropower generation and thus buys less firming power from neighboring utilities. Likewise, expenses could exceed the requested obligation program during a year of extremely below-normal hydropower generation and Western may be required to use its Continuing Fund to purchase energy to meet firm power needs.

II. A. Summary Table: Colorado River Basins Fund

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Colorado River Basins Fund.....	$ 94,101	$ 127,316	$ 129,414	$ 2,098
Total, Colorado River Basins Fund	$ 94,101	$ 127,316	$ 129,414	$ 2,098
Unused Obligational Authority	29,964	0	0	
Total, Program	$ 124,065	$ 127,316	$ 129,414	$ 2,098

II. B. Laboratory and Facility Funding Table: Colorado River Basins Fund

All Other	$ 124,065	$ 127,316	$ 129,414	$ 2,098
Total, Colorado River Basins Fund	$ 124,065	$ 127,316	$ 129,414	$ 2,098

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III. Activity Descriptions: (Budget Obligations in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Colorado River Basins fund	Western continued to operate and maintain approximately 3,400 miles of transmission lines, substations, switchyards, and communications and control equipment associated with this fund. Western provided continuing services, such as power marketing, dispatching, power billing, revenue collection, and energy services activities, for the overall operation of the projects included in this fund.	All operation, maintenance, and power marketing activities will continue.	Obligational authority is required for the continuing power marketing activities associated with this fund. These activities include operation and maintenance of transmission lines, substations, switchyards, and communications and control equipment, as well as power marketing, dispatching, power billing, and revenue collection. Environmental constraint conditions on the Colorado River Storage Project continue, resulting in a high level of power purchases. The requested increase (less than 2%) is attributed to the additional power purchases and increased cost of basic supplies, equipment, and stock items, such as crossarms, insulators, minor electrical equipment, and parts.
	$ 94,101	$ 127,316	$ 129,414
Colorado River Basins Fund	$ 94,101	$ 127,316	$ 129,414

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
ESTIMATE OF ENERGY SALES FOR FY 1994 THROUGH FY 2000 1/

(in gigawatthours) 2/

PROJECT	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Boulder Canyon Project 3/	3,990	3,930	4,078	4,101	4,115	4,130	4,527
Central Valley Project 4/	8,515	8,359	8,366	8,440	8,555	8,572	8,647
Colorado River Basin Project (Navajo) 5/	3,152	4,103	4,103	4,103	4,103	4,103	4,103
Falcon-Amistad Project	293	373	373	373	373	373	373
Loveland Area Projects 6/	2,040	2,040	2,040	2,040	2,040	2,040	2,040
Pacific Northwest-Southwest Intertie 7/	0	0	0	0	0	0	0
Parker-Davis Project	1,335	1,335	1,335	1,335	1,335	1,335	1,335
Pick-Sloan Missouri Basin Program - Eastern Division 8/	9,386	10,394	10,352	10,314	10,303	10,262	10,040
Provo River Project 9/	18	18	19	21	22	23	23
Salt Lake City Area Integrated Projects 10/	5,805	5,805	5,805	5,848	5,879	5,897	5,994
Washoe Project 11/	7	10	10	10	10	10	10
TOTAL	34,541	36,367	36,481	36,585	36,735	36,745	37,092

Footnotes on next page.

1/ All project amounts are based on preliminary 1994 Power Repayment Studies (PRS) except Colorado River Basin Project (based on estimated projections; no PRS is prepared).

2/ One gigawatthour (GWh) equals one million kilowatthours (kWh).

3/ Energy sales increase in FY 1996 due to projected water conditions at Hoover Powerplant.

4/ The decrease in sales after FY 1994 is caused by implementation of a tier rate which somewhat restricts energy usage. Project use sales also decrease slightly due to implementation of environmental controls.

5/ As of June 1, 1994, Salt River Project (SRP) has operating control of the entire United States Entitlement of Navajo, which places the entire generation output as a sale to SRP. Prior to this date, the sales figure excluded project use and pumping.

6/ For operational and marketing purposes the Fryingpan-Arkansas and the Pick-Sloan Missouri Basin Program (Western Division) were integrated into one resource in FY 1990.

7/ Pacific Northwest-Southwest Intertie shows no energy sales, but reflects revenues from the transmission of energy (refer to the table of "Revenues for FY 1994 through FY 2000"). The Intertie Project is for transmission of energy only.

8/ These energy sales represent the activities for the Eastern Division of the Pick-Sloan Missouri Basin Program only. Energy sales increase in FY 1995 due to large inflow and gradually decline to a normal point in FY 2000.

9/ Sales increase in FY 1996 due to return to normal water conditions.

10/ For operation and marketing purposes the Collbran, Colorado River Storage, Seedskadee, and the Rio Grande projects were integrated into one resource in FY 1989. Sales increase beyond FY 1996 due to a projected return to more normal water conditions.

11/ Sales increase in FY 1995 due to a return to normal water conditions.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
ESTIMATE OF REVENUES FOR FY 1994 THROUGH FY 2000 1/

(dollars in thousands)

PROJECT	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Boulder Canyon Project 2/	$ 62,571	$ 54,689	$ 63,338	$ 63,148	$ 59,410	$ 62,409	$ 55,918
Central Valley Project 3/	$239,855	245,115	277,231	270,800	285,009	282,364	280,705
Colorado River Basin Project (Navajo) 4/	60,777	87,750	87,750	87,750	87,750	87,750	87,750
Falcon-Amistad Project	3,311	3,331	3,331	3,331	3,331	3,331	3,331
Loveland Area Projects 5/	56,100	59,334	60,815	60,957	61,103	61,248	58,996
Pacific Northwest-Southwest Intertie 6/	5,854	6,158	17,689	22,376	22,371	22,366	22,361
Parker-Davis Project 7/	33,828	37,764	40,206	40,153	40,100	40,046	39,993
Pick-Sloan Missouri Basin Program-Eastern Division 8/	193,125	209,079	208,523	208,337	208,355	207,905	204,273
Provo River Project 9/	276	244	247	266	283	301	301
Salt Lake City Area Integrated Projects 10/	131,893	146,053	156,207	157,232	160,368	159,368	159,489
Washoe Project 11/	130	723	723	723	723	723	723
TOTAL	$787,720	$850,240	$916,060	$915,073	$928,803	$927,811	$913,840

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1/ All project amounts are based on preliminary 1994 Power Repayment Studies (PRS) except Colorado River Basin Project (based on estimated projections; no PRS is prepared).

2/ Revenues increase in FY 1996 due primarily to a projected rate increase caused by the start of interest and principal payments for the Hoover Dam visitor's center. In FY 1998, the decrease is due primarily to lower O&M costs and to reduced uprater credit payments. In FY 1999, the increase is due to increased uprater credit payments. Since the Boulder Canyon study is only for 5 years, the revenue amount for FY 2000 (6th year) is a flatline average. Amounts include water sales.

3/ Revenues increase in FY 1996 and thereafter due to step and tiered rate increase. FY 1997 reflects an offsetting downward adjustment based on a Revenue Adjustment Clause (RAC).

4/ FY 1994 revenues are based on spot sales of surplus generation that is not required for pumping and project use. As of June 1, 1994, Salt River Project (SRP) has operating control of the entire United States' entitlement from Navajo, placing the entire generation output as a sale to SRP. Therefore, revenues after FY 1994 reflect sale of the surplus generation at contract rate to SRP. Amounts are prior to potential income transfers.

5/ Revenues increase in FY 1995 due to proposed rate increases, and increases in wheeling revenues. In FY 2000, the decrease is due to reduced wheeling revenues in the Western Division of Pick Sloan.

6/ Revenues increase in FY 1995 due to an anticipated rate increase for transmission service. The increase in FY 1996 reflects additional revenue from the Mead-Phoenix and Mead-Adelanto Projects going in-service.

7/ Revenues increase in FY 1995 due to a proposed rate increase.

8/ Revenues increase in FY 1995 because of proposed rate increases and due to large inflow to reservoirs. Beginning in FY 1996, there is a gradual decline to normal point in FY 2000. These power revenues represent only the activities for the Eastern Division of the Pick-Sloan Missouri Basin Program.

9/ Revenues increase in FY 1994 due primarily to rate increase. Revenues decrease in FY 1995, FY 1996, and FY 1997 due to removal of Irrigation Aid, which is now paid directly to U.S. Bureau of Reclamation.

10/ Revenues increase in FY 1995 due to a projected rate increase.

11/ Revenues in FY 1994 reflect market-based prices. Revenue estimates beginning in FY 1995 reflect actual repayment obligation for the project.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION
(dollars in thousands)

ESTIMATE OF PROPRIETARY RECEIPTS

Activity	Actual FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Sales and Transmission of Electric Energy-Falcon Dam, 892245 1/	$ 29	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Falcon and Amistad Operating and Maintenance Fund, 895178 1/	1,380	3,331	3,331	3,331	3,331	3,331	3,331
Sale of Power and Other Utilities Not Otherwise Classified, 892249	13,519	2/ 39,188	39,188	39,188	39,188	39,188	39,188
Sales of Power - Western Area Power Administration-Reclamation Fund, 895000.27 3/	$302,107	$335,986	$340,618	$345,524	$348,056	$352,195	$358,645
Total Proprietary Receipts 4/	$317,035	$378,505	$383,137	$388,043	$390,575	$394,714	$401,164

1/ Prior to May 1994, Western's budgeted portion of the receipts was deposited to account #892245. Effective May 1994, all receipts are deposited to account #895178 as directed by the Foreign Relations Authorization Act, Fiscal Years 1994 and 1995.

2/ Receipts in account #892249 for FY 1994 were reduced from $39.1 million to $13.5 million due to a one-time interest deficit allocation of $20.8 million and a correction of estimated O&M and interest to actual in the amount of $4.8 million.

3/ Estimated receipts for FY 1995 through FY 2000 do not reflect projected rate increases in the Central Valley Project, the Pacific Northwest-Southwest Intertie and Salt Lake City Area Integrated Projects.

4/ Revenues for FY 1999 and FY 2000 will drop to zero if the Administration's proposal to privatize the power marketing activity is approved.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
WESTERN AREA POWER ADMINISTRATION

SYSTEM STATISTICS 1/

	1994	1995	1996
Generating Plants (No.)	55	55	55
Generating Capacity: Installed Capability (kW)	10,576,000	10,576,000	10,576,000
Substations: Number	257	258 3/	259 6/
Capacity (kVA)	20,922,036	20,935,116 4/	25,847,426 7/
Transmission Lines: (circuit miles)			
500 kV	450.34	450.34	450.34
345 kV	1,598.80	1,598.80	1,598.80
230 kV	6,877.56	6,877.56	6,877.56
161 kV	869.26	869.26	869.26
138 kV	327.42	327.42	327.42
115 kV	5,634.13	5,634.13	5,731.63 8/
69 kV and below	969.46	979.46 5/	979.46
Total circuit miles	16,726.97	16,736.97	16,734.47
Energy Sales (GWh) 2/	34,541	36,367	36,481
Western Revenues ($ in thousands) Gross operating revenues	$787,720	$850,240	$916,060

1/ Statistics reflect January 1995 reverification of Western facilities completed by each Area office.
2/ One gigawatthour (GWh) equals one million kilowatthours (kWh).
3/ New Substation - Kofa (AZ).
4/ Increase in kVA capacity is FY 1995 due primarily to addition in Akron (CO) substation.
5/ Increase in FY 1995 due to addition of the Bayard-McGrew (Nebraska) section of the Limestone-Gering-Bayard-McGrew Transmission Line (Wyoming, Nebraska).
6/ New Substation - Mead (Nevada).
7/ Increase in kVA capacity in FY 1996 due primarily to new substation at Mead (Nevada) and additions in Basic (Nevada), Tracy (California), and Sioux City (Iowa) substations.
8/ Decrease in FY 1996 reflects net of addition of City of Shasta Lake (California) second interconnection and Greeley (Colorado) Area line removal.

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Departmental Administration

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
VOLUME 3
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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996
	Non-comp	Comp	Non-comp	Comp	Request to Congress
Departmental Administration					
Office of the Secretary	2.9	2.9	3.4	3.4	3.6
Office of Policy	18.9	28.6	27.2	27.2	31.1
Chief Financial Officer	24.4	24.4	24.7	24.7	25.0
Human Resource and Administration	191.3	196.9	194.2	194.2	197.5
Congressional and Intergovernmental Affairs	5.4	5.4	5.5	5.5	5.9
Public and Consumer Affairs	3.8	3.8	4.1	4.1	4.4
Office of General Counsel	14.6	14.6	15.7	15.7	17.8
Economic Impact and Diversity	8.1	8.1	7.8	7.8	8.3
Board of Contract Appeals	0.7	0.7	0.8	0.8	0.8
Field Management	14.4	14.4	15.4	15.4	16.6
Operations Offices	110.0	110.0	114.8	114.8	117.1
Cost of Work for Others	61.6	61.6	24.4	24.4	22.8
Subtotal, Departmental Administration (Gross)	456.1	471.4	438.0	438.0	450.9
Prior Year Balances & Other Adjustments	-54.9	-54.9	-30.7	-30.7	-11.5
Subtotal, Departmental Administration (Gross)	401.2	416.5	407.3	407.3	439.4
Revenues	-112.0	-112.0	-125.7	-125.7	-122.3
Total, Departmental Administration (Net)	289.2	304.5	281.6	281.6	317.1

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Departmental Administration

For salaries and expenses of the Department of Energy necessary for Departmental Administration and other activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the hire of passenger motor vehicles and official reception and representation expenses (not to exceed $35,000), [$407,312,000] $439,444,000, to remain available until expended[, plus such additional amounts as necessary to cover increases in the estimated amount of cost of work for others notwithstanding the provisions of the Anti-Deficiency Act (31 U.S.C. 1511, et seq.): *Provided*, That such increases in cost of work are offset by revenue increases of the same or greater amount, to remain available until expended]: *Provided [further]*, That moneys received by the Department for miscellaneous revenues estimated to total [$161,490,000] $122,306,000 in fiscal year [1995] 1996 may be retained and used for operating expenses within this account, and may remain available until expended, as authorized by section 201 of Public Law 95-238, notwithstanding the provisions of section 3302 of title 31, United States Code: *Provided further*, That the sum herein appropriated shall be reduced by the amount of miscellaneous revenues received during fiscal year [1995] 1996 so as to result in a final fiscal year [1995] 1996 appropriation estimated at not more than [$245,822,000] $317,138,000.

EXPLANATION OF CHANGE

The Department does not anticipate the need for the provision which allows the increase of Cost of Work for Others funding, offset by revenue increases of the same or greater amount. The FY 1996 estimate is believed to be sufficient.

Note: The FY 1995 miscellaneous revenues and appropriation reflected in the Program and Financing Statement and the Budget Justification reflect current estimates.

OVERVIEW

OFFICE OF THE SECRETARY

The Office of the Secretary consists of three separate, but coordinated entities: the staffs of the Secretary, Deputy Secretary and the Under Secretary. In partnership, this Office coordinates the efforts of cross-cutting programs and facilitates policy development. The Under Secretary has responsibility for the science and technology programs and national security and environmental management programs. The Deputy Secretary has reponsibility for energy programs. The Secretary has oversight of all Departmental activities.

The Office of the Secretary sets the tone in establishing U.S. leadership in nonproliferation of nuclear weapons, science and technology, energy efficiency and global environmental stewardship, and energy resource development technology. The Office of the Secretary also establishes the strategic direction of the Department with input from the Department's customers and stakeholders.

The Department of Energy is entrusted to contribute to the welfare of the Nation by providing the technical information and the scientific and educational foundation for the technology, policy, and institutional leadership necessary to achieve efficiency in energy use, diversity in energy sources, a more productive and competitive economy, improved environmental quality, and a secure national defense. The Department, with its new focus, is an organization with new priorities and a sense of purpose, a new vigilance, and a culture and values that bear no resemblance to the previous agency that grew out of the Cold War. We will continue our work toward the goals of creating jobs, reducing emissions, moving technology into development and increasing competitiveness and exports.

In response to the changing world and today's new challenges and priorities, the Department has made significant progress toward its key goals of improving U.S. industrial competitiveness, reducing nuclear danger, enhancing energy security, protecting global environmental quality, and earning public trust in government. In continuation of these efforts, the Department will:

-- Improve U.S. industrial competitiveness by promoting economic growth and the creation of high-wage jobs through research and development partnerships with industry, drive products into the domestic and international marketplace, and help industry become more competitive by cost-effectively shifting from waste management to resource efficiency and pollution prevention;

-- Encourage efficiency and advance alternative and renewable energy technologies; increase energy choices for all consumers, assure adequate supplies of clean, conventional energy and reduce the United States' vulnerability to external events;

-- Use the unique science and technology resources of our laboratories and the country's universities to maintain leadership in basic research and maintain world technical leadership through long-term, systemic reform of science and mathematics education;

-- Effectively support and maintain a safe, secure, and reliable enduring stockpile without nuclear testing, safely dismantle and dispose of excess weapons, and provide the technical leadership for national and global nonproliferation activities; and

-- Understand and reduce the environmental, safety, and health risks and threats from DOE facilities and decisions, and develop the technologies and institutions required for solving domestic and global environmental problems.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION

OVERVIEW
OFFICE OF POLICY

GENERAL MISSION STATEMENT

- The Policy Office provides the Secretary and the Department the leadership and support to establish and continually improve policies and programs that advance the Department's goals by:

  - analyzing national and international issues in: energy, global environmental policy, science and technology policy, national security and environmental management policy;
  - coordinating and implementing cross-cutting program activities; and
  - guiding and assisting DOE-wide strategic planning, the budget development process, and program evaluation.

- The Policy Office carries out statutory mandates to:

  - establish and implement policies regarding international energy issues,
  - undertake activities involving the integration of domestic foreign policy relating to energy , and
  - provide independent technical advice to the President on international negotiations involving energy resources, energy technologies and nuclear weapons.

POLICY OFFICE GOALS

- On behalf of the Secretary of Energy: Develop well-defined and well-articulated governmental policies and priorities consistent with the Department's mission and vision.

  - Ensure effective communication and implementation of Administration and Departmental policies and priorities, objectives, and measurements.

  - Effectively implement programs assigned to the Policy Office.

  - Increase Policy Office effectiveness on energy-related issues within inter-departmental fora.

  - Through bilateral and multilateral fora, obtain changes in foreign countries energy, economic, environmental and non-proliferation policies and plans that support U.S. policy goals.

SECRETARIAL HIGH PRIORITIES

For FY 1996, the Policy Office is requesting funds to support the following new initiatives or high secretarial priorities.

- Continue development of the U.S. response to the Framework Convention on Climate Change. (pre and post 2000 international negotiations).

- Support for overseas Trade Promotion Coordinating Committee approved trade missions and bi-lateral talks with foreign governments.

- Support nuclear and non-nuclear initiatives with Russia and other Newly Independent States (NIS), including U.S. private sector involvement.

- Establish definitive policies on National Security; Environmental Management; Science and Technology; Safety and Health; Restoration and

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Waste Programs of the Department.

- Implement the National Environmental Technology Strategy.

- Revise and update the Department of Energy Strategic Plan to incorporate the results of the National Energy Policy Plan, and to incorporate Departmental restructuring activities.

- Continue policy analysis to support implementation of the alternative fuels and energy efficiency provisions of the Energy Policy Act of 1992.

- Facilitate and improve the Department's strategic planning process, including continued development and incorporation of performance assessments, measurements and program evaluations into the strategic planning and budget processes.

- Evaluate economic, employment,environmental and other impacts of energy policies and energy restructuring.

- Support the National Science and Technology Council (NSTC) and interagency coordination.

- Develop international and domestic science and technology programs and priorities that align with national R&D priorities.

- Continue efforts to transform the energy, economic and environmental policies of countries in Africa, Asia, Latin America, Central Europe and the former Soviet Union through high level energy policy exchanges with the aim of establishing sustainable energy development that builds on U.S. technological, management and process expertise.

FY 1994 ACCOMPLISHMENTS

- Performed analyses and activities mandated by the Energy Policy Act (EPACT). A few of the accomplishments include:

  - analysis of specific energy efficiency and supply initiatives to reduce greenhouse gas emissions;
  - analyses of the feasibility of achieving the alternative fuel goals of EPACT;
  - assessment and comparison of possible energy, environmental, economic and employment impacts of various energy efficiency standards;
  - evaluations of specific policy options for modifying or strengthening demand policies, with emphasis on industrial and personal transportation sectors;
  - development of guidelines for voluntary reporting of greenhouse gases reductions;
  - proposed rule implementing section 2306 of EPACT regarding foreign company participation in U.S. supported R&D programs; and
  - analyzed energy and environmental emissions associated with personal motor vehicles, in preparation for the Administration's Policy Dialogue.

- Developed a process for analyzing DOE science and technology portfolio, taking into consideration the expected environmental, economic, energy security benefits, the societal risks, and the level of government funding.

- Issued the Department's first Strategic Plan, which included integration of strategic planning into the budget development process.

- Provided primary analytical support to the President's Climate Change Action Plan and First National Communication required by the Framework Convention on Climate Change, including undertaking the integrated analysis for the entire Administration as well as supporting ongoing climate negotiations.

- Participated in the development and representation of U.S. positions in preparing for the first meeting of the Parties of the Framework Convention on Climate Change.

- Developed the Domestic Natural Gas and Oil Initiative, and carried out or initiated specific actions included in it such as:

- Study on Exporting Alaska North Slope Crude Oil, and tax treatment of certain oil/gas expenditures;
- National Petroleum Council reports on financial responsibility requirements for offshore facilities under the Oil Pollution Act and economic incentives for marginal oil wells;
- sponsoring workshops, producing issue papers, and making presentations at conferences that inform states on utility regulatory reforms, and that promote streamlining State and Federal regulations.

- Planned and managed the Presidential Missions to India and Pakistan led by the Secretary and developed action plans to sustain initial progress in opening the policy, trade, investment and technical assistance dialogues with these countries.

- Carried out programs for capacity building in developing countries and countries in transition to provide greater ability to address indigenous environmental, sustainable development and climate change issues.

- Developed Departmental policy positions for interagency and congressional use on reauthorization of the Clean Water, Safe Drinking Water and Comprehensive Environmental Response Comparation and Liability Acts.

- Coordinated the Department's activities on the Strategic Environmental Research and Development Program.

- Coordinated Departmental participation in state regulatory proceedings on electricity regulatory reform and integrated resource planning.

- Implemented programs in support to the Gore-Chernomhydrin Joint Commission on fissile materials control and accountability and nuclear safety assistance and fossil energy and energy efficiency objectives.

- Implemented an openness and inspection program on U.S. excess fissile materials with the IAEA.

- Supported President's "Technology for a Sustainable Future" initiatives and represented the Department in developing the Administration's National Environmental Technology Strategy, coordinating workshops with key energy and environmental industry sectors, and planning the White House Conference on Environmental Technology.

- Managed for the Office of the Secretary, the Department's participation in the National Science and Technology Council and interagency committees, including the Department's laboratories.

- Performed a full scale review and reaffirmation, including international coordination, of U.S. policy for responding to interruptions in international supplies, resulting in an Administration policy statement entitled "United States Policy for Responding to Oil Supply Disruptions."

- Evaluated the unique vulnerabilities of the U.S. insular areas to oil supply disruptions and developed policy options for reducing their dependence on imported oil as mandated by the Energy Policy Act.

- Developed the framework for and participated in a highly successful NATO Petroleum Crisis Management Training Session with active governmental and industry participation.

- Facilitated the creation of the Interagency Environmental Technology Office.

- Worked closely with cognizant Congressional Committees to develop enhancements to the language in both the Strategic Petroleum Reserve (SPR) and International Energy Program (IEP) sections of the Energy Policy and Conservation Act of 1975 (EPCA) in order to make them more compatible with and supportive of current U.S. policy.

- Implemented Trade Promotion Coordinating Committee (TPCC) programs to increase U.S. energy exports, competitiveness and jobs.

- Improve ability of Department to protect and integrate environment, safety and health associated with its activities.

POLICY OFFICE OUTPUTS/SUCCESS FACTORS

Following are a few key outputs and success factors for FY 1996.

- Integration of DOE policies, priorities and expertise into U.S. policies and actions to reduce dangers of nuclear proliferation.--An agreement on Arctic and Pacific dumping of nuclear waste will be completed and implemented by 2nd Quarter, FY 96. By the end of FY 96, a fissile materials control agreement with the former Soviet Union will be completed and implemented, and a mass balance inventory of DOE nuclear and non-nuclear materials will be completed.

- Completion of studies of effects on human subjects involved in federally-sponsored research, and development and implementation of system for tracking research effects on human subjects. By the end of FY 96, a plan for appropriate remedies for dealing with abuses, if any, will be developed.

- Ensure completion of ES&H high priority activities by the end of FY 96. Policy Office oversight, along with CFO and ES&H participation, of ES&H performance and improvement team activities, which include monitoring, development, and implementation of team recommendations, will insure completion of ES&H high priority activities.

- Support of and participation on Federal Working Group for external oversight of DOE nuclear facilities. This will insure that recommendations presented by the Under Secretary and approved by the Congress are implemented by the end of FY 96.

- By the end of FY 96, a restructuring of the electricity industry will be analyzed.

- Systematically assess the state of energy emergency preparedness within the U.S. This will focus on the vulnerability of petroleum, natural gas, and electrical energy systems to severe disruptions and the effectiveness of existing policies. Through a collaborative net assessment process involving all primary stakeholders, requirements for improved energy emergency preparedness by the energy industry, state and local governments, and the Federal government will have been identified, and relevant preparedness programs will be initiated or implemented by the end of FY 96. (Most of these activities are funded by Interior and related agencies' appropriations.)

- Development of policy on climate change will continue, emphasizing approaches that will result in reduction of energy-related emissions. These approaches will include implementation of a voluntary reporting system for greenhouse gas emissions, a U.S. pilot program on joint implementation (USIJI), continuation of the U.S. Country Studies Program, and integrated analysis of U.S. mitigation measures. During FY 96, work will provide a basis for developing an U.S. mitigation policy and international negotiating positions.

- Development of policies that will result in the mobilization of the Department's science and technology resources and capabilities in support of national goals and priorities. During FY 96, in R&D management plan required by EPACT (Section 2304) will be developed; a national technology deployment program will be established with a goal of reaching 10,000 businesses a year; DOE's R&D budget will be leveraged with industry, with a goal of a 10% increase in the number of leveraged partnerships with industry.

- Policies and investments will be leveraged through cooperation with state, local and tribal governments in technology deployment and joint research. By the end of FY 96, the goal is to achieve at least a total investment of $45 million in joint projects with state, local and tribal governments. Other goals include an increase by 5% in the percentage of the DOE R&D budget that is leveraged through partnerships with state, local and tribal governments; and at least 6 DOE Labs and 4 Program Offices will be engaged in joint research and/or deployment projects with these entities.

- Increased access to diverse foreign markets, including coordination of three Secretarial missions to big emerging markets to promote sustainable energy development and energy trade, increased dialogue with foreign energy officials to support expanded utilization of U.S.

energy and environmental technologies.

- During FY 96 the Department will conclude agreements to support sustainable energy development with three additional countries that have been identified as priority markets. The Department will continue to implement agreements with Russia, India, and China and initiatives under the Summit of the Americas and Asia Pacific Economic Cooperation.

- Perform legislative and regulatory analyses related to technological and environmental impacts, and provide program and budget guidance-- all related to natural gas and oil resource development.

- Development and implementation of customer service standards. During FY 1996, the Policy Office will survey customers and stakeholders to determine their needs and requirements; and, by March 1997, will complete development of a customer service strategy with the goal of a 50 percent increase in satisfaction among the Policy Office customers and stakeholders by the end of FY 1996.

- Incorporation of Performance Measurement into the strategic planning and budget process. During FY 1996, the Policy Office will continue to assist program offices in the development and implementation of performance indicators that will effectively measure progress towards achievement of program goals.

- Develop, coordinate, and integrate a Departmental Policy regarding the orderly transfer of lands, facilities, and materials from Defense Programs to the Office of Environmental Management for disposal, reuse, or decontamination and decommissioning.

- Develop, coordinate, and integrate a Departmental Policy regarding the transportation of international radioactive wastes with an eye on the lowest risk possible to the general public.

- Develop, coordinate, and integrate a single Departmental Policy regarding technology initiatives that support environmental restoration and waste management activities affecting DOE sites.

- Develop a single Departmental Policy that addresses private and public sector concerns regarding land use upon completion of environmental remediation.

STREAMLINING PLANS

Over time, we will be eliminating or reducing levels of effort in the following areas;

- Emergency planning reductions will be accomplished through improved coordination of emergency planning and policy development with other Policy Office and Departmental elements while maintaining effectiveness of activities.

- International Affairs programs which currently coordinate several ongoing bilateral government meetings will be eliminated or the schedule of meetings will be reduced with governments which either have little energy program involvement with the Department or do not have sufficient energy issues to justify the utilization of limited staff.

- In the areas of administrative support, efforts are underway and planned to incorporate process improvement techniques to seek opportunities to reduce staff devoted to administrative functions such as travel. We have already eliminated 3 FTEs in our administrative component of the Policy Office by eliminating the development of non-value added reports.

- It is important to note that the reorganization involved a review of the functions assigned to the Policy Office and many functions duplicated by other DOE offices were eliminated.

- In the future we will be evaluating existing programs to determine their validity to the Department and to see if they can be streamlined or eliminated. Possible candidates for review include Foreign Visits and Assignments, and Foreign Travel tracking data system and related

directives.

- We will establish an FTE usage plan in FY 1995 which can show us each pay period what our on-board count is and how our actual usage tracks against our plan.

- Milestones have been developed to improve supervisor to employee ratios. These will be achieved through greater utilization of teams and restructuring as appropriate. Opportunities for consolidation of offices will also be considered.

- Reduction in GS/GM 14, 15, SES positions will be monitored. Methods to achieve these reductions include buyouts, retirements, delayering, and recruiting at lower grades.

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OFFICE OF CHIEF FINANCIAL OFFICER

The Office of Chief Financial Officer (CR) provides centralized direction and oversight on the full range of financial matters including: Department-wide compliance with the requirements of the Federal Managers' Financial Integrity Act (FMFIA); Departmental accounting and financial policies, procedures and directives; operation and maintenance of the Department's payroll system and Financial Information System/Standard General Ledger; performance of financial management functions (accounting, cash management, and reporting) for the Department's Headquarters offices and selected financial management functions for field locations; oversight of financial operations for the Naval Petroleum Reserves in California and Wyoming; and responsibility for overall quality budget formulation, execution, and financial compliance activities within the Department, including continued improvement of coordination and communications between Departmental Headquarters' and field organizations.

FY 1994 ACCOMPLISHMENTS

-QUALITY MANAGEMENT-
-Established a quality management infrastructure, including the appointment of a CFO Quality Coordinator and seven customer focus advocates
-Established a cooperative agreement to foster a constructive, working relationship between the National Treasury Employees Union and the Office of CFO, that provided for creation of the Department's first full-time Labor/Management Partnership team
-Developed the Department's first Financial Management Strategic Plan
-Established Process Improvement Teams (PIT) to support the CFO Strategic Plan thrust areas of Financial Stewardship, Full Partnership, and Financial Systems and Information Architecture
-Prepared the CFO's FY 1994 Status Report and Five-Year Financial Management Plan, the tactical segment of the strategic planning process
-Developed draft overall criteria and performance measures for DOE and contractors in support of contract reform efforts
-Cascaded down phases of the quality process to all employees within the CFO including briefings, presentations, training sessions, and "Idea Day"; surveyed customers to determine if their needs were being met and how to better serve them; and established study teams to oversee the progress being made on ideas and concerns coming from surveys of customers and fellow employees.
-Issued a draft Quality Management Implementation Plan and a draft Customer Quality Service Master Plan

-BUDGET-
-Participated closely in planning for and carrying out the first quality based planning and budget process which was driven by the Department's Strategic Planning Process and which emphasized consensual agreement on budgetary levels, participation in the Budget Stakeholders' Group in such areas as bench marking of overhead, budget data warehouse, streamlining the budget process, incorporation of performance measures, improvement of narrative, and reduction of paperwork.

-Continued to work with the field offices and Headquarters program offices to improve the quality of budget estimates by: instituting a more extensive on-site validation review program for field budget submissions, initiating a major review of M&O contractor functional and allocable costs, increased Office of Budget participation in contractor compliance reviews, and issuance of the FY 1996 "Unified" Field Budget Call which forms the baseline upon which specific budget estimates are developed.

-Obtained budgetary resources for the Department, including Office of Management and Budget (OMB) apportionments and Treasury warrants, on a timely basis; provided central control and direction for these resources; ensured resources were expended within the appropriate administrative and legal guidelines and limitations;

-Conducted liaison with Congressional appropriations committees on appropriations and budgetary issues and assisted in the preparation of Departmental witnesses testifying before these committees.

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-Initiated a formal review process of the Department's uncosted balances.

-Prepared the Secretary of Energy Annual Report to Congress as well as the Chief Financial Officer's Annual Report to Congress.

-FINANCIAL POLICY-
-Evaluated accounting directives against new and revised regulatory and statutory requirements, relevant audit and review findings, and emerging issues. As a result, directives were updated in the areas of cash transfers between M&Os, construction accounting, reimbursable work, revenues and other collections; standard financial management clauses for inclusion in all new and renewed M&O contracts; payments in lieu of taxes to local taxing jurisdictions for loss of revenues on land acquired by DOE; tax reporting and withholding for employee travel allowances; use of alternatives to cash travel advances to include automated teller machine transactions and travelers checks; allowability of meeting-related costs; and use of nonfund transactions to recognize incremental costs and liabilities. Directives were canceled in the areas of: vulnerability assessments, investments, systems, and financial management of receipts from persons who violated DOE regulations.

-COMPLIANCE AND AUDIT-
-Conducted five compliance reviews to determine adherence with Departmental financial management policies and FMFIA requirements, and to improve the integrity and effectiveness of the Department's financial operations. These reviews resulted in over 70 recommendations which were accepted.

-Streamlined the Department's Management Control Program (FMFIA) and the CFO Compliance Review Program by eliminating no value requirements.

-Prepared the Secretary's Annual FMFIA Report to the President and Congress; and the tenth Semiannual Reports to Congress on Inspector General Audit Reports.

-ACCOUNTING-
-A replacement system for the Financial Information System (FIS) is being developed and implemented in phases. The new system will be known as the Management Analysis and Reporting System (MARS). During FY 1992, Phase I of MARS was placed in operation. This included the establishment of the Departmental Accounting and Analysis Division as a Departmental Integrated Standardized Core Accounting System (DISCAS) site. FY 1994 Phase II efforts consisted of creating a MARS database to act as a repository for accounting data from field sites, and installing a Wide Area Network (WAN) to link field sites with MARS.

-Submitted a Standard General Ledger (SGL) trial balance, representing 80% of DOE accounts, to the Treasury Federal Agencies Centralized Trial-Balance System (FACTS). DOE was a pilot agency for transmitting actual data to meet Treasury requirements of submission of trial balance data in SGL format for use in producing Government-wide financial statements. Agencies are required to submit FY 1994 trial balances in March 1995.

-Implemented the Departmentwide Energy Time and Attendance (ETA) System which automates previous manual processes for reporting time and attendance; the Departmental Inventory Management System (DIMS) which tracks nuclear materials inventory; reports to aid field organizations in controlling reimbursable work at the order level; and a proposed system for reporting M&O maintenance costs.

-Performed extensive analysis of the Report on Budget Execution (SF-133) preparation and reconciliation process, resulting in improved data integrity.

-Established the Uranium Enrichment Decontamination and Decommissioning Fund pursuant to the Energy Policy Act. This fund will provide funding for theses activities at the Department's uranium enrichment facilities.

-Participated in groups initiated by the joint Financial Management Improvement Program (JFMIP) and the Financial Management Systems Improvement Council (FMSIC) aimed at developing financial management requirements for inventories and improving contractor financial management systems.

-Implemented Travel Manager which tracks and expedites processing of DOE Headquarters travel authorizations and vouchers, and use of Third Party Drafts for the payment of travel advances and reimbursements.

-Streamlined DISCAS operations by: eliminating two-step travel funding validation, enhancing the invoice logging and GTS payment process,

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automating interface for the Labor Distribution System (LDS) non-dispersed items and the impact credit card process, and replacing the Management Overhead Distribution System (MODS) with a more efficient retrieval and updating process.

SPECIFIC OBJECTIVES FOR FY 1995 THROUGH FY 1999

-QUALITY MANAGEMENT-
-Finalize the CFO's Quality Improvement Plan and implement the appropriate performance measurements to track and analyze progress in the quality journey
-Enhance and expand the CFO customer survey instrument; develop a customer feedback system; and institute a common survey instrument for use CFO-wide
-Finalize the CFO's Master Customer Service Plan
-Reinforce commitment to good stewardship of resources through a training workshop for all DOE employees
-Continue to empower/involve employees by encouraging positive change through participation on PIT teams on financial information structure and systems and full partnership through a seamless organization. Better processes and associated organizational improvements will lead to increased awareness and responsinbility for financial stewardship, improved financial systems, and greater cooperation (full partnership) between the CFO and other DOE programs.

-BUDGET-
-Revise budget structure to align with strategic plans and mission changes; institutionalize the budget validation process, including reviews of overhead and uncosted balances; improve contractor budget estimates; establish a new DOE budget process to address ES&H expenditures and priorities; seek to acquire legislation to authorize a new funding mechanism to ensure progress in cost-effect siting, licensing, and construction of repository of permanent isolation of commercial nuclear wastes; continue to increase automation of budget formulation, execution, and presentation activities to enhance detail required to defend budgets and achieve paperwork reduction; and lead the Department in an effort to share best practices in program/project support costs, and produce budget guidance and justifications through electronic medium versus printed form.

-POLICY-
-Strive for lessened regulation, while maintaining the Department's financial integrity and management controls through review and update of existing regulations and timely issuance of accounting and financial policies and procedures.

-COMPLIANCE-
-Conduct 25 compliance reviews at major field sites to determine adherence with financial policies and procedures; conduct a financial management system evaluation program to determine compliance with GAO and OMB requirements for financial systems, and coordinate GAO activities.

-ACCOUNTING-
-Implement Phase II of MARS which will utilize the database established in FY 1994 to transfer the initial editing function to all DISCAS sites. MARS will replace the Financial Information System (FIS) which is 30 years old. FIS will merge with DISCAS to become MARS (a centralized departmental accounting system) which will use current technology, have flexibility to adapt to OMB and Treasury systems, and will streamline reporting. The FIS will be operated and maintained until Phase III is completed in FY 1997, which consists of implementing the U.S. SGL at the detail transaction level and conversion from FIS reporting to MARS reporting.

-Establish DOE-wide task groups to address SGL requirements such as: training, data conversion, reporting and editing, and fiscal year-end to accomplish the implementation of SGL by FY 1996.

-Implement DOE-wide cost effective electronic payment mechanisms; review prices for DOE products to maximize revenues; support standardization of Power Marketing Administrations' financial systems; develop DOE-wide financial statements; and implement a CFO imaging pilot project.

-Consolidate the Decontamination and Decommissioning System, the Nuclear Waste Fund System and the Consent Order Tracking Investment System into one database application.

-Continue to support the Financial Management Systems Improvement Council (FMSIC) initiatives toward standardization or sharing of financial

management systems and benchmarking activities against industry.

-Expand use of Travel Manager and automate to interface with DISCAS; implement direct deposit for travel advances and reimbursements; install a voice recognition unit system on DISCAS for answering routine travel and vendor status inquiries; and expand the local travel fund program to additional Headquarters program offices.

-Implement pilot program for electronic commerce by receiving vendor invoices and issuing payment over electronic medium; and implement interface between the Departmental Training Information System (DTIS) and DISCAS.

-STREAMLING PLAN-
-National Performance Review (NPR) reductions will be implemented in the CFO organization through: advances in use of technology and automation; contracting out DOE payroll functions; consolidation of accounting functions; streamlining of CFO/program budget functions; and reducing the employee/supervisory ratio. NPR envisioned accounting and budgeting position reductions based on reductions in budget controls and separate activities for which we would be required to account. There are potential adverse impacts to achieving these reductions if: we are unsuccessful in our streamlining efforts, sourcing out payroll, and budget controls and accounting reductions do not materialize. These impacts include: risk of errors due to less thorough review of budget estimates and accounting information; delays in responding to customer requests; and risk of waste, fraud and abuse or improper financial management practices. For FY 1995 our strategy involves use of buyouts and reassignments to meet our FTE target. Future milestones and strategies will be developed as key decisions on budget streamlining and payroll out sourcing are made.

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HUMAN RESOURCES AND ADMINISTRATION

Assistant Secretary for Human Resources and Administration provides centralized administrative oversight, policy direction and procedural guidance for the full range of Department of Energy program operations at Headquarters and field installations.

Major areas of responsibilities include:
- o Organization, staffing and management systems
- o Personnel management and employee development and training
- o Telecommunications management
- o Freedom of information
- o Administrative services
- o Space management
- o Automated data processing development, management and acquisition
- o Management information system development
- o Building and engineering support
- o Information resources management policy, standards, and oversight
- o Procurement, acquisition, and financial assistance activities
- o Contract administration and management
- o Personal property management
- o Contractor Human Resources Management
- o Logistics and scheduling in support of Secretarial official ceremonies, speeches and travel
- o Centralized repository, document control, tracking and coordination for Secretarial action, concerns and signature activities.

SIGNIFICANT RECENT ACCOMPLISHMENTS

- o Completed milestones and actions required for FY 1994 under Defense Nuclear Facilities Safety Board recommendation 93-3.

- o Implemented a Departmentwide Employee Orientation program which assures consistency in the induction of new employees throughout the Department.

- o Completed the Department's fifth Senior Executive Service Candidate Program with 43 graduates to meet executive staffing needs.

- o Began implementation of contract reforms identified in the Secretary's Contract Reform Team initiatives.

- o Continued implementation of the salary freeze initiative on contractor employees at major Department facilities which will save over $1.5 billion over a five-year period.

- o Consolidated commercial timesharing services saving over $1.6 million throughout the Department.

- o Refocused organizational efforts to emphasize process improvements, quality management and customer service.

- o Established and implemented the Technical Leadership Development Program; issued Manager's Guide to Administrative Flexibilities; initiated legislative excepted service provision; and began the development of technical competency qualifications requirements in support of the commitments of the Defense Nuclear Facilities Safety Board Recommendations 93-3 and 92-7.

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- Revamped and reconstituted the Executive Resources Board and implemented a new Senior Executive Service Performance Management System, effective July 1, 1994, that links performance with organizational strategic planning and quality management streamlining initiatives.

- Established labor/management partnerships (from position based to interest based) and expanded outreach with Historical Black Colleges and Universities, Hispanic Serving Institutions, and Native American organizations.

- Developed rightsizing guidelines for workforce planning, implemented buyout and early-out retirement programs and established Career Management Resource Centers.

- Developed Departmental implementation plan for reduction of internal regulations and eliminated 63 directives (15 percent reduction), saving $30 million annually.

- Reduced the number of Departmental Advisory Committees.

- Began streamlining activities in support of the Vice President's National Performance Review Streamlining Initiative. Developed the Human Resources Streamlining Plan which sets goals to be met through FY 1999.

MAJOR PROGRAM OBJECTIVES

- Continue streamlining activities in support of the National Performance Review Streamlining Initiative. Between FY 1995 and FY 1999, Human Resources will reduce FTE levels by 10 percent by re-engineering work processes and eliminating, consolidating or redelegating functions; increase the supervisor to employee ratio; reduce Headquarters staff by 10 percent, personnel specialists by 20 percent, and acquisition specialists by 21 percent; reduce SES and GM/GS positions by 39 percent. During FY 1995 Human Resources will remove an entire layer of management from its organizational structure.

- Complete final implementation of actions required by the Defense Nuclear Facilities Safety Board recommendation 93-3 including assessment and revision of qualification and training standards, course validation.

- Complete implementation and perform follow-up evaluation of the Department's Leadership Development Program.

- Continue development, delivery and refinement of competency based professional and technical training.

- Continue to adopt and implement recommendations of the Department Contract Reform Team.

- Implement a pension plan oversight program to improve administration of pension plans under management and operating contracts.

- Lead the development of the common, shared corporate information systems needed to support proactive management of the Department.

- Lead the design of an information processing and dissemination infrastructure that will facilitate the Department's commitment to openness and trust.

- Implement Electronic Commerce systems for small purchases across the Department.

- Establish goal and performance measures in accordance with National Performance Review recommendations.

- Implement family friendly work place practices.

- Nurture a productive management-union relationship, and expand alternative methods of dispute resolution and bargaining.

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CONGRESSIONAL AND INTERGOVERNMENTAL AFFAIRS

The Office of Congressional and Intergovernmental Affairs ("Office") is responsible for developing, managing and ensuring coordination of the Department of Energy's ("Department") relations with the Congress; State, Local units of government, and Tribal officials; and other Federal agencies. The Offices that comprise Congressional and Intergovernmental Affairs will be responsible for interactions with officials in the Congress, States, Local units of government, and the Tribes to represent the Department for the purpose of ensuring public awareness and understanding of the Department's mission which includes energy, technology and science, national security, and industrial competitiveness. The Office participates in hearings, briefings, and/or meetings with Members of Congress and their staffs; State, Local units of government, and Tribal officials; and other Federal agencies regarding the following areas: the President's Energy and Environmental Initiatives; Environment, Safety, and Health; Climate Change Action Plan; Environmental Management; Environmental Justice; Defense Conversion/Reconfiguration/Jobs Impact; Energy Policy Implementation; Civilian/Defense Nuclear Waste; Technology Development; Mission of the National Laboratories; Energy Supply Initiatives; Worker Safety and Facilities Management; National and Community Service Initiative; and the Department's business priorities as outlined in the Department's Strategic Plan, in general. Other specific issues the Office covers are: Openness Initiative; Contract Reform: National Energy Program Plan; Spent Fuel; the Department's Budget; Domestic Natural Gas and Oil Initiative; Clean Car Initiative; Clean Cities Initiative; the Weatherization Program; Energy Policy and Conservation Act; Sale of the Alaska Power Administration; corporatization of the Bonneville Power Administration; and coordination and information exchange in support of African energy development.

The Office is responsible for the management of over 300 Departmentwide Communications Plans announcing all major policy and program matters and decisions to Members of Congress, Congressional Committees of jurisdiction, States, Local units of government, Tribal and other interested officials. There are 28 Congressional authorizing and appropriation Committees/Subcommittees with jurisdiction over the Department as well as other Committees/Subcommittees which have an interest in Departmental programs. Also, the Office is responsible for the implementation of a Departmentwide American Indian Policy which provides guidance to other Departmental organizations in managing their program activities affecting Tribal Indians.

FY 1994 ACCOMPLISHMENTS:

During FY 1994, the Office communicated regularly with the Congress and the intergovernmental community in connection with the implementation of the National Energy Policy Act of 1992 ("Act"). These interactions included briefings, meetings, and hearings at the Committee and Subcommittee levels for the implementation of the Act. The Office scheduled and prepared the Secretary and senior Department officials for meetings with Members of Congress, and managed interactions with national and regional organizations of State, Local units of government, and Tribal government officials. A total of 3,100 meetings were covered by staff members. In addition, the Office reviewed 108 hearing transcripts, answers to 123 pre-hearing questions and 2,020 post-hearing questions, and 149 inserts for the official record. The Office assisted with the production of a quarterly newsletter, "The Energy Messenger," with a circulation to all Federally-recognized Indian Tribes, major national and regional Indian organizations, State Indian Commissions, other Federal agencies, and individuals interested in the Department's activities that affect interest to the Indian community. The Office also participated in Environmental Management's State and Tribal Government Working Group meetings and stakeholders forums.

SPECIFIC OBJECTIVES FOR FY 1995 THROUGH FY 1999:

During FY 1995 through FY 1999, we will continue our mission to serve and establish a closer working relationship with the Congress, States, Local units of governments, Tribal governments, and other Federal agencies to ensure they are kept apprised of the Department's critical mission of energy, technology and science, national security, and industrial competitiveness and that their views and concerns are reflected in the Department's decisionmaking process.

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Our goals are to develop and maintain a positive reputation with Congressional, Intergovernmental, and internal customers; effectively coordinate and provide value-added strategic advice for Congressional, Intergovernmental, and internal customers; maximize use of human resources; and develop a management information system to improve information exchange with our customers.

In addition, we will strive to improve our representation and exchange of information with Members of Congress (and their staff), Governors, and other stakeholders on Departmental programs and policies; and improve on how the Department is viewed, e.g., responsive, trustworthy, and timely relating to Congressional and Intergovernmental concerns/initiatives.

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PUBLIC AND CONSUMER AFFAIRS

Mission: To Communicate DOE's mission and benefits to the public directly and through the media; involve the community, consumers and the public in decisions vital to their interests; improve internal communications and build public trust through timely, responsive and honest communication.

The Office of Public and Consumer Affairs is responsible for managing and overseeing the Department's public affairs effort, comprising public information activities, press and media services, Secretarial advance, consumer liaison, speaker scheduling, publication of special information materials, research, speechwriting, special projects, and editorial services in accordance with the Secretary's policy of "openness" and credibility. Through these efforts, the office communicates the Department's programs and mission.

The Consumer and Public Liaison Division is the central coordination point for the Department's communication and outreach activities to consumer, business, and community groups. The division serves as the point of contact for the Department's evolving Public Participation Program and ensures that new initiatives and policies of this Administration are articulated to energy-oriented organizations and citizens nationwide, particularly to local communities surrounding our weapons facilities and national laboratories; and, it provides early warning on numerous sensitive issues in the states to DOE program officials, particularly relating to reconfiguration of the Weapons Complex; environmental restoration and waste management matters; energy production and use issues and related environmental concerns; and implementation of the Energy Policy Act. The division arranges surrogate speakers for the Secretary and other principal DOE officials and promotes speaking opportunities to inform and educate the American public of the Department's mission.

The Research and Special Projects Division provides technical expertise and support to the Secretary in prepartation for speeches and in all public appearances to define, explain, and promote the policies and programs of the Department. The division also produces research, editorials, by-line articles for magazine and trade journals, and other forms of communications support for the Department.

The Public Information Division responds to general public inquiries about the Department and national energy policy. It is also responsible for the overall review, policy, and management of all Departmental publications, exhibits, and audiovisual products. The division runs an open call-in and walk-in public inquiries service where the general public can obtain information about DOE. The Public Information Division publishes the monthly Departmental news magazine, "DOE This Month", and assembles and distributes to senior staff daily newspaper and weekly magazine clippings concerning the Department's mission and activities. This division also coordinates public events and programs, such as Energy Awareness Month, and assists other Departmental elements with such programs as Public Service Recognition Week and the Combined Federal Campaign by developing information materials and publicizing the events.

The Press Services Division manages press services for the Department in accordance with the Secretary's policy of "openness", increasing public awareness of energy programs by moving from a reactive to a proactive posture: Serves as chief voice on behalf of the Secretary, Deputy Secretary and Under Secretary of Energy on all energy issues; provides policy advice and communication plans on dissemination of information to the public routinely and in emergencies; serves as the central point of contact with the national print and broadcast media; and prepares media advisories, press releases, fact sheets, background information and other materials for the Secretary and Departmental senior officials to use when talking to the media. The division arranges press conferences, interviews, editorial boards and similar public opportunities for the Secretary and other Departmental officials.

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FY 1994 Accomplishments

- o Established first department-wide public participation policy, which is an open, ongoing, two-way communications, both formal and informal between the Department of Energy and its' stakeholders
- o Developed quality incentives plan for PA employees
- o Established PA internal newsletter
- o Developed DOE annual accomplishment report
- o Established news tracking system for Secretary
- o Developed strategic communications plans

Specific Objectives FY 95-99

- o Extend communications clusters throughout DOE complex
- o Facilitate quality communications team initiatives
- o Build credibility with customers through innovative partnerships
- o Improve access to information
- o Promote motivational atmosphere
- o Refine cluster concept and apply throughout PA
- o Identify priority supplier/customer lists
- o Establish/revise processes to improve two-way information flow with suppliers and customers
- o Design voluntary rotational assignment process within PA and for all PA employees
- o Individual Career Development Plan
- o Recognition among PA Employees as a caring and empowering organization that realizes the mutual benefits of fostering growth and development of its employees and respect for their individual goals and personal mission.
- o Internal Communication- a new initiative envisioned to ensure cohesive and consistent communications to inform employees about the Department's major issues.
- o Streamlining Plan

  PA began its streamlining in the fall of 1993 with submission of a formal structure that totally flattened the organization. There are no intervening supervisory levels in PA. The current supervisory/ employee ratio is 1 to 11.
- o Upgrade public inquiry systems to provide one-stop shopping
- o Facilitate participatory decision-making in communications through expansion of PA cluster groups
- o Improve quality of public meetings and customer involvement
- o Generate greater and more positive media focus
- o Improve technology and management of visual information by:
  - Products that reflect shared information
  - Staff trained on Local Area Network
  - Press staff trained on newly developed Spectra-Fax communications system
- o All PA employees trained in Quality Management and Customer Service
  - External and Internal surveys and quality measurements reflect improved performance and internal customer satisfaction.
  - Staff trained in Total Quality Management Awareness

OVERVIEW

GENERAL COUNSEL

MISSION STATEMENT:

The Office of General Counsel is responsible for providing comprehensive legal services to the Secretary and the Department. Those services include legal counsel with respect to every program and function of the Department, except those relating to the Federal Energy Regulatory Commission and Environment, Safety, and Health's administrative enforcement activities of Nuclear Safety. General Counsel is responsible for review of proposed Departmental actions and the defense of those matters through both judicial and administrative litigation in federal and state courts, at the trial and appellate levels. Because of the diversity and magnitude of the Department's activities, a single office within General Counsel may be responsible for providing legal services with respect to as many as 50 different statutes, and the legal expertise required may encompass the entire range of the law, from issues of constitutional proportions to personnel law matters affecting individual employees.

General Counsel is responsible for conducting several programs of Department-wide application. The Intellectual Property program manages and protects the Department's wealth of intellectual property, whether it be in the form of a patent, trademark, or copyright, that results from the billions of dollars invested in the Department's research and development activities. The Standards of Conduct program implements the ethical standards requirements of the Department of Energy Organization Act and other statutes and regulations with which current and former employees must comply.

General Counsel assists other departmental elements by providing legal support to their programs, such as the drafting and review of proposed legislation.

General Counsel does not expect any loss of responsibility or workload through any anticipated departmental or congressional initiatives. As the Department devotes greater resources to both environmental and security needs and undertakes new activities to implement the Energy Policy Act of 1992, General Counsel anticipates allocating increased resources to provide the necessary legal support to accomplish the Department's goals.

As part of the Secretary's reorganization plan, the Economic Regulatory Administration was realigned under the Office of General Counsel on June 10, 1993. Because that organization is funded under the Interior and Related Agencies appropriation, its FY 1996 budget request is submitted separately.

FY 1994 ACCOMPLISHMENTS:

In order to provide better service to the Department and to assist in the implementation of Secretarial policies, General Counsel has, among other things, taken specific action in three areas:

- National Environmental Policy Act reforms.
  The process of resolving NEPA issues was streamlined.

- Contract reform.
  Guidelines were developed in response to the Secretary's initiatives to improve the Department's historical practice in awarding contracts.

- Regulatory intervention.
  Procedures were developed whereby General Counsel will advance

Departmental policies through intervention in state public utility proceedings.

SPECIFIC OBJECTIVES FOR FY 1995 THROUGH FY 1999.

General Counsel will continue to carry out its responsibilities as described in the Mission Statement. Policies and procedures described in the preceding section will be implemented. All policies and procedures will constantly be reviewed for sufficiency. In addition, General Counsel will be involved in the development and/or implementation of policies and procedures in the areas of rulemaking and alternative dispute resolution.

As presribed by the National Performance Review (NPR), General Counsel has reviewed its staffing and organizational structure and has developed the following plan.

General Counsel believes it will be able to reduce NPR targeted positions from 18 in FY 1994 to 12 in FY 1995, 7 in FY 1996, and 6 in FY 1997 through FY 1999. The reductions in NPR targeted positions are intended to be accomplished through the current buy-out and other retirement programs and will not affect the mission of General Counsel. No reductions in NPR positions will be replaced by contractor employees.

General Counsel believes its current organizational structure is optimum. Consequently, while some supervisory positions can be eliminated, the best that General Counsel can accomplish regarding supervisory ratio is to increase it 50%, from 3.0 beginning FY 1994 to 3.7 in FY 1995, and 4.6 from FY 1996 through FY 1999.

The Intellectual Property program processed approximately 7,200 actions associated with patents, invention disclosures, and waiver requests in FY 1994, and will process approximately 7,500 in FY 1995 and 8,000 in FY 1996.

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OFFICE OF ECONOMIC IMPACT AND DIVERSITY

GENERAL MISSION STATEMENT:

The Office of Economic Impact and Diversity was created in June 1993 by merging three separate offices within the Department of Energy: the Office of Minority Economic Impact, the Office of Small and Disadvantaged Business Utilization, and the Office of Civil Rights. The Secretary of Energy created this new Office to advise and lead diversity strategies which ensure full participation of all employees; to create full partnerships with small and disadvantaged businesses and minority educational institutions; in addition to fulfilling the legislative mandates of the components of the Office.

The functions of the MINORITY ECONOMIC IMPACT DIVISION (MI) are authorized by P.L. 95-619 to develop focused programs which address the impacts of energy policies, programs, regulations, legislation, and other actions of the Department on minorities, minority educational institutions, minority business enterprises, and minority communities.

The focused activities of the Research Program will continue to utilize the socioeconomic data base and the quantitative analytical models and other related resources of the Office, to assist the policy and program offices of the Department to identify and implement credible programs and policy options which could soften the adverse impacts of energy policies and programs on minorities. These efforts will enable minorities to increase their participation in technology-related activities of the Department and the energy industry. Resources will be used to provide analytical tools to enable minority educational institutions and minority business enterprises to integrate feasible technical and economic strategies for enhancing their technical resource base and economic development capabilities. The utilization of the analytical resources of the program for the development and implementation of the distributional impact analysis module for the National Energy Modeling System (NEMS) will enable the Department to provide the energy and environmental industries with unique assessment data and software to assist utilities with their rate determinations and demand-side management decisions. The ability to incorporate into such analyses equity factors, which facilitate a viable equilibrium among social and economic variables, will assist the Department with its decisionmaking regarding the provisions of Executive Order 12898 on Environmental Justice.

Management and Technical Assistance programs will support the Department's educational initiatives by (1) complying with Executive Order 12876 regarding Historically Black Colleges and Universities, and (2) emphasizing increased technical educational programs and the development of our Nation's human resources. Program activities will focus on investing in human resources at all levels of the educational curricula, including precollege levels, and will also sustain economic growth in minority communities. Initiatives for scientific training and research efforts in the mathematics and scientific disciplines and the development of research and education infrastructure at minority educational institutions will continue to be supported. In addition, increased synergistic linkages with industry and the national energy laboratories will augment the technical capabilities of the labor force in the energy industry sectors and improve the current critical deficient levels of their participation in Departmental and energy industry opportunities. Programs will provide relevant technical assistance and information to enable Black, Hispanic, and Native American Indians' minority educational institutions and businesses to participate in the long-term energy supply and price decisionmaking processes.

Increased technical and financial assistance programs for business enterprises will provide structured funding programs through the Minority Business and Community Development Program activities, including financial incentives and technical guidance to encourage small businesses to participate in the R&D and the transfer and commercialization of new technologies. These efforts will facilitate long-term investments by utilizing and combining relevant elements of MI's Minority Bank Deposit Financial Assistance Program with other government-funded programs at Federal and State organizations. Such focused market strategies for those technical and financial assistance activities will address the objectives of the Energy Policy Act of 1992 by enhancing representative participation

of all population segments in the transfer and commercial application of scientific and technology-oriented energy research. These efforts will contribute directly to the Energy Policy Act of 1992 goal of transferring energy technology developmental efforts across all end-use sectors and to the Department's goal of enhancing U.S. energy security and world competitiveness. The Minority Energy Information Clearinghouse will provide an internal clearinghouse for environmental information as the Department implements its environmental justice strategies.

The functions of the SMALL AND DISADVANTAGED BUSINESS UTILIZATION DIVISION (BU) are legislated by P.L. 95-507 for the oversight of Departmental programs regarding the development and execution of policies and programs, to ensure that an equitable portion of the total contracts and subcontracts for the Department's supplies and services are placed with small and disadvantaged businesses, women-owned business enterprises, and labor surplus areas. BU focuses its attention on the oversight of the entire Department's small business efforts. Program activities involve the management of a disadvantaged business enterprise program to fully engage small and disadvantaged businesses in prime and subcontract programs of the Department; in accordance with the provisions of the Small Business Act. This includes establishing goals and tracking Departmental awards to small business firms. The primary means of securing an equitable proportion of transactions for these businesses is through procurement preferences, including total set-asides, partial set-asides, 8(a) sole source procurements, and 8(a) competitive procurements. Other activities include the oversight and monitoring of planned procurements exceeding $3 million by program and procurement offices to ensure that set-asides and 8(a) procurements are given adequate consideration. BU Division will assume specific liaison and tracking responsibilities which will be assigned to it through acquisition regulations relating to Section 3021 of the National Energy Policy Act of 1992 (EPACT) regarding the 10 percent set-aside provision for contracts and subcontracts, to be shared among small disadvantaged business concerns, including Historically Black Colleges and Universities, and Hispanic-serving and Native American-serving colleges and women. A Departmental Committee was established in FY 1993 to determine, among other considerations, the amount of dollars being spent and to be spent, on EPACT-related procurements.

The responsibilities of the CIVIL RIGHTS DIVISION (CR) incorporate various functions to serve as the Department's enforcer to ensure that the civil rights of employees are protected and complaints are processed within applicable regulatory timeframes. Authorized legislation includes the Age Discrimination in Employment Act of 1967; Title VII of the Civil Rights Act of 1964, as amended; the Equal Pay Act of 1963; and Section 501 of the Rehabilitation Act of 1963. CR develops the framework and mechanisms for an aggressive Department-wide 10-Point Civil Rights, Affirmative Employment, and Equal Opportunity Plan. Through the Department's 10-Point Equal Employment Opportunity Plan, this Division (1) monitors the results with regard to hiring, promotions, training, and equitable treatment; (2) reviews policies and practices within program offices to assure that they do not overtly or inadvertently inhibit the opportunities of minorities, women, and persons with disabilities and (3) assures that these policies and practices do not contain artificial barriers or inhibitors to affirmative and equal employment. It also ensures that each Departmental program office establish policies and procedures within its respective area for implementing equal employment opportunities and affirmative action goals and objectives. Included in its responsibilities, are the development and implementation of policies and procedures for assuring that organizations receiving financial assistance from DOE comply with applicable laws and regulations. CR conducts several headquarters commemorative, training, and ethnic heritage programs such as: Federal Women's Week, Black History Month, Dr. Martin Luther King, Jr. celebration; Hispanic Heritage Week; Asian/Pacific and Native American activities; etc. It also conducts onsite EEO Program Management Evaluations of selected DOE field organizations on a periodic basis.

FY 1994 ACCOMPLISHMENTS:

Research Program

- Updated the Minority Economic Impact Model in support of the National Energy Modeling System. Specifically, the development of a share-model used to allocate energy consumption within a end-use service category by fuel type.
- Developed a PC base software product which is available at the Energy Science and Technical Software Center. This software product is used for the analysis demand-side management programs and utility rate structure.
- Developed the Distributive Impact Assessment Module (DIAM) which will be used to quantitatively determine the impact of policies, programs and other activities on minority consumption and expenditure patterns; and employment and income.

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Overview - OFFICE OF ECONOMIC IMPACT AND DIVERSITY (Cont'd)

- The Minority Energy Assessment Model (MEAM) was dramatically modified. Changes to MEAM generated output consistent with the output generated by the National Energy Modeling System residential module.
- The 1990 Residential Energy Consumption Survey (RECS6) have been incorporated into the Socio-Economic Research and Analysis Program (SERAP) database. It will be used to reestimate and bench mark the MEAM.
- Participated in numerous workshops to explain the provisions of Executive Order 12898 on Environmental Justice, outline required changes to the analytical scoping process, and discussed various impacts such as transportation; in addition to mitigation options.

Management and Technical Assistance Program

- Established 8 new partnerships between 2-year post-secondary colleges and industry. In addition, 4 new workshops were conducted, 1 linkage was established with industry, and 2 new precollege partnerships were initiated for the purpose of providing technical assistance to minority educational institutions, and encouraging minority student interest in math and science.
- Raised the limit of the 8(a) pilot program from $50,000 to $3 million which allowed management and operating contractors to do more business with 8(a) companies.
- Developed a customized data base to refer businesses to Headquarters and Field Offices according to their capabilities and the needs of the Department.
- Awarded Cooperative Research and Development Agreements with two minority business enterprises to assure that minority businesses benefit from technologies developed at DOE laboratories.
- Eleven trips were approved under the Minority Institution Research Travel Program (MIRT) which assist minority academic institutions of higher education in initiating and improving energy-related research and collaborative research efforts.
- Increased the number of minority students in energy-related careers for both undergraduate and graduate levels.
- Established partnerships with industry to promote economic growth opportunities within the minority communities.
- Supported start-up of 8 new projects which will provide unique combination of student aid and enrichment, industrial linkages, and articulation agreements.
- Increased the number of minority students in the fields of engineering, mathematics and science.
- Awarded grant to provide training to enhance the preparation of African American males in grades 4, 5, and 6 for college entrance and energy-related study.

Financial Assistance Program

- Increased the bank deposits to minority financial institutions from $53 million to $206 million since fiscal year 1993. These funds are from the Petroleum Violation Escrow account.

Civil Rights Program

- 144 formal complaints were closed. Processed 75 Headquarters' counseling requests and provided EEO counseling services to other agencies.
- Conducted 111 EEO investigations both at Headquarters and the field.
- Developed procedures to request 90-day extension for investigating complaints. Developed proposed procedures for sanitizing Reports of Investigations. Along with other agencies developed alternative methods to investigate EEO complaints.
- Continued implementation of developing affirmative action plans; monitoring contractor and grantee compliance with programs under Titles VI and VII of the Civil Rights Act.
- Completed routine civil rights compliance reviews in the field. Briefed Diversity Program Managers nationwide on their responsibilities regarding Civil Rights Compliance in Federally Assisted Programs. Completed 45 preaward civil rights clearance forms.
- Continued vigorous outreach to promote cultural awareness and identifying advantages of a multicultural workforce through the development, implementation, and evaluation of programs and practices which are designed to secure and maintain equal employment for minorities, women, and disabled persons.

SPECIFIC OBJECTIVES FOR FY 1994 THROUGH FY 1998:

Goal 1: Partner with the Community

- Achieve environmental justice and accountability for improved environmental regulations and legislation.
- Expand the Bank Deposit Financial Assistance program.
- Liaison with Tribal governments.
- Detail employees to assist in community development activities.
- Provide educational outreach in diverse communities.
- Develop analytical and data tools to assess the distributive effects of policies, programs, and activities associated with DOE's newly identified five business lines; industrial competitiveness, energy resources, science and technology, national security, and environmental quality; and conducted a workshop to disseminate the information and methods to our stakeholders.

Goal 2: Partner with Minority Educational Institutions

- Facilitate collaborative research and development efforts between educational institutions and the Department's national laboratories by sharing facilities and human resources.
- Support participation of minority educational institutions in "cutting edge" science and technology research and development.
- Reduce barriers by streamlining processes for technology transfer and facilitating the rapid commercialization of technology advances.
- Provide developmental funds for cooperative programs which encourage underrepresented students to pursue science, engineering and technology careers.
- Develop strategies to fuse the education and training missions of the universities with the needs of the energy industry and the basic research need of our national laboratories.
- Develop and support infrastructure at universities to enhance physical and laboratory facilities, scientific instrumentation, research and library holdings.

Goal 3: Enhance Partnerships with Small, Minority and Women-Owned Businesses

- Develop a customized data base of minority and women-owned businesses.
- Review all procurement requests valued in excess of $3 million to insure maximum opportunities for minority business enterprises. Ensure equitable opportunity to compete for subcontracts.
- Provide technology transfer opportunities.
- Implement mentor-protege initiative.
- Increase access of minority entrepreneurs to technologies and scientific expertise found in Department's laboratories and facilities.
- Maximize opportunities in environmental and energy efficiency and renewable areas.

Goal 4: Strengthen Partnerships with Employees

- Establish shared values throughout the Department in support of our vision of diversity. Integrate diversity into the Department's total quality management initiatives.
- Recruit, hire, and maintain a diverse work force. Establish Diversity Councils and training programs. Incorporate diversity goals into performance reviews and reward systems. Ensure career development and training opportunities are utilized to support diversity goals. Integrate work force diversity goals with operational and organizational activities.

DEPARTMENT OF ENERGY
FY 1995 CONGRESSIONAL BUDGET REQUEST
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OVERVIEW

BOARD OF CONTRACT APPEALS

The Board of Contract Appeals serves as an administrative tribunal established pursuant to the Contract Disputes Act of 1978. It is responsible to the Secretary and under law for the fair and impartial trial and adjudication of a variety of contract and grant disputes. With few exceptions, these disputes arise out of acquisition and financial assistance programs funded by The Energy and Water Appropriations Act. The Board exercises an array of statutory and delegated authorities. Board decisions constitute final agency decisions and are not subject to administrative review or modification. Additionally, the Board is the element of the Department primarily responsible for the provision of neutrals for alternative disputes resolution procedures in contract and financial assistance disputes. Available procedures include arbitration, mediation, mini-trial, settlement judge case evaluation and summary trials.

The majority of Board cases are contractor appeals and are heard under the Contract Disputes Act of 1978. The Board proceeds much like a trial court: the parties file pleadings, make motions, present oral arguments, offer evidence and file briefs. The Board rules on motions and admits evidence in accordance with the Federal Rules of Evidence. It issues written decisions which are appealable directly to the Court of Appeals for the Federal Circuit. The Board also sits as the Department's Financial Assistance Appeals Board, Invention Licensing Appeals Board, Patent Compensation Board and Contract Adjustment Board; hears certain subcontractor appeals under the provisions of prime M&O contracts; and, to the extent resources permit, provides hearing officers for environmental, Debt Collection Act, employee offset and other miscellaneous proceedings as requested by Departmental officials. It also serves as the board of contract appeals for the Nuclear Regulatory Commission.

FY 1994 Accomplishments:

During FY 1994 the Board accomplished the following:

1. The Board managed all cases on its docket in an effective and expeditous manner.

2. The Board initiated a training program to qualify all judges to serve as mediators.

3. For the first time, the Board undertook and successfully mediated a substantial contract dispute. (The Board has successfully engaged in numerous Alternative Dispute Resolution (ADR) actions involving other forms of ADR.)

Specific Objectives for FY 1995 through FY 1999:

1. Update Board Rules to include:

   a. ADR procedures and statement of policy favoring use of ADR.

   b. Revise Rules of Practice for contract disputes to make practice before the Board more efficient.

   c. Comprehensive statement of Board organization, functions and authorities.

2. Prepare and publish guide to ADR available through the Board with model protocols for each form of ADR.

3. Complete certification training in mediation for all judges.

4. Continued management of all cases on Board's docket in an effective and expeditous manner.

OVERVIEW

FIELD MANAGEMENT

The Associate Deputy Secretary for Field Management is charged with coordinating for strategic planning for all field elements as well as management coordination and oversight of all Operations Offices, the Rocky Flats Environmental Technology Site, and the Ohio Field Office. This includes, review of resource allocations, infrastructure requirements, and general oversight responsibilities. The mission also includes the development and execution of policy with these Offices and the implementation of project management, cost, facilities management systems and programs, and contractor employee protection.

FY 1994 ACCOMPLISHMENTS

- Developed and revised DOE orders to more efficiently operate the project control system.
- Developed/implemented and upgraded facility maintenance programs and Capital Asset Management process.
- Developed policy for the orderly transfer of contaminated facilities from operating organizations to Environmental Management.
- Developed training course for certification of project managers.
- Expanded the Independent Cost Estimating process by incorporating indirect costs and total project costs. Developed estimates for Environmental Restoration programs.
- Baselined a significant portion of Department Major System Acquisitions (MSAs) and formalized performance measurement system for all MSAs.
- Continued implementation of the Metric Transition Plan for the Department of Energy.
- Ensured that Departmental construction projects requested were planned in accordance with the Department's energy and facilities management policies.
- Avoided utility rate increase of about $1.0 million a year through rate case interventions.
- Achieved a $6.8 million cost avoidance by partnering with the Defense Fuel Supply Center for the competitive acquisition of natural gas for Department sites.
- Developed a streamlined Management and Operating contractor real property leasing process.
- Completed over 30 "Whistleblower" cases during FY 1994.
- Thirteen cases completed through Contractor Employee Protection assisted alternative dispute resolution efforts during FY 1994.
- Developed four Secretarial initatives pertaining to whistleblowers in support of the Secretary's "Celebration of Openness."
- Produced investigative products cited by public interest groups and "customers" for their quality and thoroughness.

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Overview - FIELD MANAGEMENT (Cont'd)

- Completed management assistance reviews of the Tokamak Physics Experiment and the B Factory Project to ensure that effective management practices were in place.

GOALS

- Further delegate management authority and responsibility for Major Systems Acquisitions and major projects to the Operations Office, Rocky Flats, and Ohio Field Office Level.

- Initiate the program leading to certification of project managers within the Department.

- Capture a complete database of DOE facilities in support of asset management and an orderly transition of facilities.

- Create an atmosphere in which contractor and subcontractor employees feel free to express concerns relating to safety, health, and environmental issues, as well as waste, fraud or abuse.

- Seek to help the parties involved in complaints reach informal settlements of disputes among themselves rather than have a resolution imposed on them after investigation and adjudication.

- Further integrate the strategic planning, baselining, and budgeting processes.

- Empower the Operations Offices, Rocky Flats, and Ohio Field Offices to conduct certain Energy Systems Acquisition Advisory Board actions.

- Simplify the Project Validation process.

- Develop a corporate facilities management culture to better support the Department's changing missions.

- Continue to achieve cost avoidances through utility rate case interventions and utility acquisition planning and management.

- Conduct pilot peak power demand reduction programs at two major DOE laboratories.

- Develop Corporate Facilities Management Directives to promote a life cycle approach for the acquisition management and disposal of the Department's Infrastructure.

- Install state - of - the - art Facilities Information Management System (FIMS) at Department Headquarters and all Department sites.

- Install automated facilities inspection processes at all Department sites.

- Install a Comprehensive Landord Intergrated Facilities Planning Process for the Department.

- Manage the Department's transition to the metric system.

- Work with Departmental elements to improve oversight of contractor operations.

- Certify 80 percent of Major System Acquisition project managers by the end of FY 1996.

- Delegate 20 percent of Major System Acquistions to Program Officers and Field Managers.

- Reduce Validation Reporting Requirements by 10 percent.

OVERVIEW

CHICAGO OPERATIONS OFFICE

The Chicago Operations Office (CH) is a technical and business management team whose purpose is to advance the Department of Energy's Mission and core values through managing programs, projects, facilities, and contracts. CH is responsible for integrated management of energy laboratories and facilities as well as execution of DOE programs and projects in the field. CH performs a broad range of functions in support of research and technology development activities at its various contractor sites. These functions include: field procurement and contract administration; environmental restoration and waste management; environmental, safety and health monitoring; property management; labor relations; personnel; and financial management. CH prepares and administers budgets and maintains both technical and administrative staff to support on going programs and projects for Energy Research and several other DOE Program Offices. In addition, CH has cognizance of over 12,000 contractor employees located at various site offices, national laboratories, and other facilities under its purview. The budget supports Federal staff required to carry out these crosscutting administrative and technical oversight responsibilities, which are applicable to a broad range of DOE programs.

CH oversight responsibilities include: High Energy Physics and Nuclear Physics programs; Fusion Energy R&D and related test facilities; Basic Energy Sciences; Biological and Environmental Research; the Advanced Reactor Base Technology programs; Security Affairs; Environment, Safety and Health; Decontamination and Decommissioning and other Environmental Restoration and Waste Management efforts; Energy Efficiency and Renewable Energy and Cogeneration Technology projects; technology utilization; university construction grant programs; and Work for Others.

Laboratories and facilities operated and managed by CH include multiprogram facilities - Argonne National Laboratory-East (ANL) and Brookhaven National Laboratory (BNL); single-purpose facilities - Ames Laboratory at Iowa State University, MIT's Bates Linear Accelerator Center, Fermi National Accelerator Laboratory (FERMILAB), Michigan State University's Plant Research Laboratory, Notre Dame Radiation Laboratory, and Princeton Plasma Physics Laboratory (PPPL); and Government-owned Government-operated Laboratories - Environmental Measurements Laboratory (EML) and New Brunswick Laboratory (NBL)

STREAMLINING PLAN:

CH streamlining plan was submitted to HQ on September 14, 1994 and outlines the organizations' plan for streamlining operations and meeting the objectives of the National Performance Review (NPR).

CH plan identifies opportunities for focusing organizational components around core business lines as enumerated in the CH Strategic Plan and identifies various opportunities for introducing teaming concepts into our day-to-day business operations.

As outlined in this plan, CH is committed to the Departmental goal of a 1:10 supervisor to employee ratio by the close of calendar year 1994. Additionally, we will work to achieve modest reductions in NPR targeted series, where feasible.

FY 1994 ACCOMPLISHMENTS

Chicago Operations and its facilities achieved significant management and programmatic accomplishments during FY 1994. The CH Quality Initiative grew to involve about 250 operations office employees and many Action Planning Teams and some Process Improvement Teams concluded their assignments. As part of this initiative, CH issued its first-ever Strategic Plan, celebrated the successes of the Quality Teams, and launched Customer-Recognition events. As part of a key CH Strategic Goal, CH lead DOE Contract Reform initiatives by developing a new model contract for non-profit contractors, and started negotiation of new performance-based contracts for Argonne and Brookhaven.

Fermi National Accelerator Laboratory achieved a major scientific goal in the discovery of new evidence of the existence of the Top Quark. CH

led the effort to ready the Tokamak Fusion Test Reactor at Princeton Plasma Physics Laboratory for tritium operations, resulting in a new world record fusion energy exceeding it's original design objective. Successful management of large construction projects continued at the Brookhaven Relativistic Heavy Ion Collider, Fermilab Main Injector Project, and the Argonne Advanced Photon Source -- which begins accelerator commissioning and possibly early experiments in 1995, under budget and a year ahead of schedule. New Brunswick Laboratory provided in-depth technical assistance to DOE's nuclear non-proliferation initiatives in the Russian Federation, Ukraine, and Kazakhstan and led several key safeguards initiatives at DOE facilities. CH restructured its environmental restoration and D&D project to reduce lifecycle costs, resulting in accelerated completion of key projects and an estimated savings of $85 million over the life of the projects involved. CH launched regional Technology Transfer and Small Business Initiatives focusing on improving access to DOE facilities, eliminating pollution and reducing waste. Technology Transfer activities included 77 CRADAs at CH facilities in FY 1994, a significant increase over prior years.

PROGRAM EVALUATION:

The Departmental Administration program is needed to provide a wide range of services that benefit a number of programmatic areas. Due to the multi-purpose of CH no single program is willing or capable of providing necessary resources. Support of this budget is essential in order to implement Secretarial initiatives and provide resources to carry out our mission and vision.

GOALS AND OBJECTIVES:

We will be leaders in developing and using innovative systems and standards for contractor selection, negotiation, and management with particular emphasis on Performance-Base management Contracting. This will include achieving results-oriented, cost-effective, environmentally sound, and safe workplace management practices at all facilities, expanding the portfolio of projects managed by our office and pursuing new initiatives which enhance our current business lines and complement our competencies. In addition, we plan to establish a regionally-based technology transfer and competitiveness program by collaborting with contractors, and users, grantees, industrial partners, universities, and state and local government.

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IDAHO OPERATIONS OFFICE

The DOE Idaho Operations Office is responsible for administering the Idaho National Engineering Laboratory (INEL), a multi-program Government-owned contractor-operated laboratory in the areas of waste management operations; environmental restoration activities; nuclear safety research; test reactor operations; remediation projects, decontamination and decommissioning (D&D) activities, fuel consolidation efforts; biological and environmental research; nonproliferation and national security programs; coal and petroleum technologies; conservation and renewable energy programs; industrial partnering initiatives, Cooperative Research & Development Agreements (CRADAS) and technology transfer activities.

The DOE Idaho Operations Office performs a wide variety of functions in support of energy activities throughout the country. Among these functions are field procurement, health and safety monitoring, property management, labor relations and maintenance of personnel, and financial systems. The DOE Idaho Operations office plans, develops, and administers budgets, and maintains an administrative staff to support on-going programs and projects. In addition, the field office has cognizance over thousands of contractor employees located at various locations.

1994 Accomplishments:
Emphasis has been placed on improving Environmental, Safety and Health (ES&H) programs at Idaho facilities as well as emergency preparedness. Other areas which have received priority attention in FY 1994 are safeguards and security, Chief Financial Officer initiatives, industrial partnering initiatives, Cooperative Research & Development Agreements (CRADAS) and technology transfer activities.

Organizational Streamlining Plan:
Through effective planning, Idhao has compiled a 75%-25% ratio of technical to administrative manpower mix. Targeted positions to be reduced are administrative personnel. Effective manpower management through a matrix organization has created a 17:1 supervisor to employee ratio.

Program Evaluation:
Metrics are being created to establish baselines to be used as data points in performance evaluation. Historical accomplishments will be used as bench marks. Indicators will be identified, measured, and monitored enabling potential continuous improvement.

Goals and Objectives:
Contract/Procurement
- o Reduce cycle time for placing procurements
- o Increase involvement in Small and Disadvantaged Business in all technical activities (especially engineering and construction)
- o Implement contract reform provisions into M&O contracts

Financial
- o Improve systems for baselining, monitoring, reporting, and validating contractor cost savings from conversion of M&O contractors to Performance Based management contracts as a major effort in Contract Reform.
- o Implement first phase of a plan to develop a management informtion system to support program management activities

Personnel
- o Increase diversity in the Department despite rightsizing environment
- o Increase training opportunities for employees while emphasizing criticaljob skills in a rightsizing environment

ES&H
- o Reduce ES&H risk by performing compliance reviews and accomplishing compliance actions

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OVERVIEW

OAK RIDGE OPERATIONS OFFICE

The Department of Energy Oak Ridge Operations Office (ORO) is responsible for administering activities at the Oak Ridge National Laboratory (ORNL), a multi-program Government-owned contractor-operated laboratory which conducts a diversified research and development program on a variety of energy technologies. The DOE Oak Ridge Operations Office is also responsible for administering the Department's defense programs activities at the Y-12 Plant, including technology transfer; the environmental restoration and waste management programs for all DOE sites in the Oak Ridge complex; and the Oak Ridge Institute of Science and Education (ORISE), a Government-owned contractor-operated facility operated by a consortium of colleges and universities which conducts research, education and training, technical assistance, and technology transfer programs for the Department. ORO also has responsibility for the Superconducting Super Collider (SSC) Project termination.

The DOE ORO performs a wide variety of functions in support of energy activities throughout the country. Among these functions are field procurement, health and safety monitoring, property management, labor relations and maintenance of personnel, and financial systems. The DOE ORO plans, develops, and administers budgets and maintains an administrative staff to support ongoing programs and projects. In addition, the operations office has cognizance over thousands of contractor employees located at various locations.

STREAMLINING PLAN

The DOE Oak Ridge Operations Office's Streamlining Plan reflects proposed reductions in the number of supervisory personnel in order to increase the employee-to-supervisor ratio. This will be accomplished by the consolidation of functions within branches/divisions, the consolidation/elimination of certain branches within divisions, and the reassignment of some branch supervisors to "team leaders" - all in an effort to reduce organizational layering and to increase spans of control.

FY 1994 ACCOMPLISHMENTS

During FY 1994, there were several initiatives undertaken which have had positive results in several of our focus areas. Martin Marietta Energy Systems, Inc. has begun planning for a site-wide Work Breakdown Structure (WBS) organization concept; the operations office has developed draft plans for compliance with the department's streamlining goals; the ORNL Site Office has developed a system to quantify the existing risk at the ORNL plant on a quarterly basis and has integrated that with cost benefits for addressing the risk; the ORNL Site Office has developed a plan for conversion of FTE's to facility representatives for the purpose of decreasing ES&H risks via increased DOE presence in the field; ORO has continued to stress involvement of Small Businesses and implemented increased initiatives and tools for our M&O's to accomplish this; and ORO has enhanced its training programs as related to Defense Nuclear Facilities Safety Board (DNFSB) activities and has developed teams which are evaluating enhancements to current financial and budgetary data systems. These initiatives will help form the foundation necessary to provide ever improving performance in the areas of business management, human resources, and environment, safety, and health (ES&H).

PROGRAM EVALUATION:

Metrics are being created to establish baselines to be used as data points in performance evaluation. Historical accomplishments will be used as bench marks. Indicators will be identified, measured, and monitored enabling potential continuous improvement.

GOALS AND OBJECTIVES:

Major emphasis is being placed on improving ES&H programs at Oak Ridge facilities as well as emergency preparedness. Other areas receiving increased attention are safeguards and security, Chief Financial Officer initiatives, DNSFB activities, task order contracting, technology transfer activities, and more rigorous business management practices. Support of this budget is essential in order to implement secretarial

initiatives, carry out program missions, assure protection of the environment, and promote the safety and health of employees and the public. Specific goals and objectives are as follows:

Project Management:
- o Streamline project management procedures and processes.
- o Complete annual scope of each project within budget and on schedule.
- o Implement a site-wide Work Breakdown Structure (WBS) for the M&O Contractor.

Contract/Procurement:
- o Reduce cycle time for placing procurements.
- o Increase involvement in Small and Disadvantaged Business in all technical activities, particularly engineering and construction.
- o Implement contract reform provisions into M&O contracts.

Financial:
- o Decrease contractor overhead without shifting to direct costs.
- o Improve systems for baselining, monitoring/reporting/validating contractor cost savings from conversion of M&O contractors to performance-based management contracts.
- o Improve financial oversight of M&O contractors, identifying opportunities for cost reductions.
- o Implement the first phase of a plan to develop a management system to support program management systems.

Human Resources:
- o Increase diversity in the Department despite rightsizing environment.
- o Increase training opportunities for employees while emphasizing critical job skills in a rightsizing environment.
- o Increase supervisor-to-employee ratio to DOE goal of 1:10.

Environment, Safety, and Health:

- o Reduce ES&H risks by performing compliance reviews and accomplishing compliance actions.
- o Increase technical support to line management in ES&H/QA areas.
- o Review NEPA compliance program to reduce cycle time and costs of noncompliance.

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OAKLAND OPERATIONS OFFICE

The Oakland Operations Office (OAK) manages several Government-Owned Contractor-Operated laboratories including Lawrence Livermore National Laboratory (LLNL), Lawrence Berkeley Laboratory (LBL), Stanford Linear Accelerator Center (SLAC), and the Energy Technology Engineering Center (ETEC). The office also oversees DOE research at the Laboratory of Radiobiology and Environmental Health (UCSF), the Laboratory of Laser Energies (University of Rochester), and numerous industrial contractors (e.g., General Atomics and General Electric) and grants.

OAK oversight responsibilities include program and project activities in Defense Program R&D, High Energy Physics and Nuclear Physics Programs, Fusion Energy R&D, Basic Energy Sciences, Biological and Environmental Research, Nuclear Energy Program, Decontamination and Decommissioning and other Environmental Restoration and Waste Management efforts, Energy Efficiency and Renewable Energy, and Fossil Energy programs as well as oversight of Technology Transfer and Work for Others activities.

OAK performs a wide variety of functions in support of energy activities at various contractor sites. Among these functions are field procurement and contract administration, health and safety monitoring, property management, labor relations, and personnel and financial management. OAK prepares and administers budgets and maintains a technical and administrative staff to support ongoing programs and projects for numerous Program Secretarial Offices. In addition, OAK has cognizance over 12,800 contractor employees located at national laboratories, and other facilities. This budget supports the Federal staff required to carry out these crosscutting administrative and oversight responsibilities, which are not applicable to any single DOE program.

STREAMLINING PLAN

The OAK Streamlining Plan contains a target increase of employee-to-supervisor ratio of 10 to 1 by December 31, 1994, and 15 to 1 by 1999. OAK has accomplished an 11.9 to 1 employee-to-supervisor ratio which exceeds the December 31, 1994 goal. Goals for decreases in layers of management, average grade reductions, and reductions in the number of GS-14s and above are also targets in the plan. This would eliminate one layer of management.

OAK is delegated complete responsibility for financial management within its office and its contractor sites. These delegated responsibilities include policy development, execution and review. The Department's programs and projects are accomplished through contracts, and the "administrative" staff is essential in support of these contracts which deliver the program activities.

FY 1994 ACCOMPLISHMENTS

Industrial Relations completed approximately 19 appraisals of contractor performance; Contracts Management processed approximately 1600 procurement actions which included financial assistance instruments and contracts, of which 5 were M&O Contractors; completed scheduled ES&H and financial management reviews; and administered and provided oversight of approximately 31 line-item construction projects and General Plant projects for six DOE programs at three M&O Contractors.

GOALS AND OBJECTIVES

To have OAK recognized as a leader in program management resulting from assignments and accomplishment of an optimum and diverse mix of program/projects; OAK and its laboratories will become technology R&D partners of choice and a major source of scientific and technical information for industry, State, and local government, educational institutions and small and disadvantaged businesses; to be a recognized leader in developing and implementing model management systems and work processes designed to provide quality products with superior customer service. To satisfy customers and be responsive to

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stakeholders, such that OAK is the acquisition operation office of choice for DOE/HQ and other DOE customers/stakeholders; to transition from compliance/transaction-oriented contract administration to efficient, risk-based, systems-oriented contract management of the Laboratories. To achieve ES&H excellence oriented towards efficient, risk-based systems management. To have leadership and management practices that are a model for the Department.

Financial
- o Complete FY 1996 financial management oversight reviews by end of FY 1996
- o Improve systems for baseline, monitoring, reporting, and validating contractor cost savings as a crucial effort implementing contract reform
- o Improve coordination of contractor oversight programs.
- o Implement first phase of a plan to develop a management information system to support program management activities

Contract/Procurement
- o Reduce cycle time for placing procurement
- o Increase involvement in Small and Disadvantaged Business in all technical activities (especially engineering and construction)
- o Implement Energy Policy Act (EPACT) requirements
- o Implement contract reform provisions in M&O contracts
- o Reduce backlog of contracts in "close-out" from previous years.

Project Management
- o Complete annual portion of each project within budget and on schedule
- o Reduce cost beyond FY 1995 reductions
- o Reduce program management cost beyond FY 1995 reductions

Environmental Safely and Health
- o Reduce ES&H risk, accomplish compliance actions, continue compliance reviews.

Human Resources
- o Increase diversity in the Department despite downsizing environment
- o Increase training opportunity for employees while emphasizing critical job skills
- o Increase the employee to supervisor ratio

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

DEPARTMENTAL ADMINISTRATION

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Office of the Secretary					
Operating Expenses	$ 2,856	$ 3,416	$ 0	$ 3,416	$ 3,569
Personnel Compensation					
Operating Expenses	$ 161,493	$ 170,487	$ 0	$ 170,487	$ 180,944
Benefits					
Operating Expenses	$ 30,776	$ 32,399	$ 0	$ 32,399	$ 34,185
Travel					
Operating Expenses	$ 5,317	$ 5,755	$ 0	$ 5,755	$ 6,172
Support Services					
Operating Expenses	$ 177,000	$ 178,330	$ 0	$ 178,330	$ 176,507
Program Support					
Operating Expenses	$ 9,317	$ 16,381	$ 0	$ 16,381	$ 19,665
Capital Equipment					
Capital Equipment	$ 7,780	$ 6,895	$ 0	$ 6,895	$ 7,095
Cost of Work for Others					
Operating Expenses	$ 61,626	$ 24,356	$ 0	$ 24,356	$ 22,826
Use of Unobligated Balances					
Operating Expenses	$ -54,927	$ -30,707	$ 0	$ -30,707	$ -11,519
Subtotal, Use of Unobligated Balances	$ -54,927	$ -30,707	$ 0	$ -30,707	$ -11,519
Revenues					
Revenues Associated with Cost of Work for Others					
Operating Expenses	$ -30,099	$ -29,174	$ 0	$ -29,174	$ -25,788
Miscellaneous Revenues					

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LEAD TABLE - DEPARTMENTAL ADMINISTRATION (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses	$ -81,890	$ -96,518	$ 0	$ -96,518	$ -96,518
Subtotal, Revenues	$ -111,989	$ -125,692	$ 0	$ -125,692	$ -122,306
Subtotal, DEPARTMENTAL ADMINISTRATION	$ 289,249	$ 281,620	$ 0	$ 281,620	$ 317,138
Adjustment	0	0	0	0	0
TOTAL	$ 289,249	$ 281,620	$ 0	$ 281,620	$ 317,138
Summary					
Operating Expenses	$ 281,469	$ 274,725	$ 0	$ 274,725	$ 310,043
Capital Equipment	7,780	6,895	0	6,895	7,095
Total Program	$ 289,249	$ 281,620	$ 0	$ 281,620	$ 317,138
Staffing (FTEs)	3,034	3,069	0	3,069	3,067

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

DEPARTMENTAL ADMINISTRATION

FY 1995 Appropriation	$ 281,620
- Adjustment -	0
FY 1995 Adjusted	$ 281,620
- Transfer -	0
FY 1995 Comparable	$ 281,620

Office of the Secretary

- Personnel Compensation- Increase reflects the full effect of the FY 1995 locality pay increase and pay raise, the partial year effect of the FY 1996 locality pay increase and pay raise and other base salary adjustments.	+133
- Benefits- Increase commensurate with salary adjustments.	+22
- Travel- Decrease in accordance with the President's administrative savings initiative, adjusted for inflation.	-1
- Support Services- Decrease in accordance with the President's administrative savings initiative, adjusted for inflation.	-1

Personnel Compensation

- Policy- Reflects an increase of 2 FTEs to support environmental management policy development, plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise, partially offset by an FTE decrease of -3 in accordance with NPR reductions.	+396
- Chief Financial Officer- Reflects the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and payraise, partially offset by an FTE decrease of -1 in accordance with NPR reductions.	+609
- Human Resources & Administration- Reflects an increase of +11 FTEs to support environmental management activities, plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. This increase was partially offset by an FTE decrease of -38 in accordance with NPR reductions.	+3,370
- Congressional and Intergovernmental Affairs- Reflects an increase of +2 FTEs for environmental management	

SUMMARY OF CHANGES - DEPARTMENTAL ADMINISTRATION (cont'd)

Personnel Compensation (cont'd)

activities, plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +358

- Public and Consumer Affairs- Reflects an increase of +1 FTE for environmental management activities plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +220

- General Counsel- Reflects an increase of +7 FTEs for environmental management activities and +13 FTEs for class actions, health and safety litigation, contract reform, and administrative litigation, plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +1,913

- Economic Impact & Diversity- Reflects an increase of +4 FTEs for environmental justice in the minority community plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +430

- Board of Contract Appeals- Reflects the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +29

- Field Management- Reflects an increase of 7 FTEs for environmental management activities, plus the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +794

- Chicago Operations Office- Reflects the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise, partially offset by an FTE decrease of -1 in accordance with NPR reductions. . . . . +907

- Idaho Operations Office- Reflects the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise. . . . . +391

- Oak Ridge Operations Office- Reflects the full effect of the FY 1995 locality pay increase and pay raise and the partial year effect of the FY 1996 locality increase and pay raise, partially offset by an FTE decrease of -4 in accordance with NPR reductions. . . . . +701

- Oakland Operations Office- reflects the full effect of the FY 1995 pay raise and the partial effect year effect of the FY 1996 pay raise, partially offset by an FTE decrease of -1 in accordance with NPR reductions. . +339

Benefits

- Policy- Reflects an increase commensurate with salary adjustments. . . . . +57

- Chief Financial Officer- Reflects an increase commensurate with salary adjustments. . . . . +94

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SUMMARY OF CHANGES - DEPARTMENTAL ADMINISTRATION (cont'd)

Benefits (cont'd)

- Human Resources & Administration- Reflects an increase commensurate with salary adjustments and an increase in Workmans Compensation . . . . . +746
- Congressional and Intergovernmental Affairs- Reflects an increase commensurate with salary adjustments . . . . +51
- Public and Consumer Affairs- Reflects an increase commensurate with salary adjustments. . . . . +31
- General Counsel- Reflects an increase commensurate with salary adjustments. . . . . +261
- Economic Impact and Diversity- Reflects an increase commensurate with salary adjustments. . . . . +60
- Board of Contract Appeals- Reflects an increase commensurate with salary adjustments. . . . . +5
- Field Managment- Reflects an increase commensurate with salary adjustments. . . . . +111
- Chicago Operations Office- Reflects an increase commensurate with salary adjustments. . . . . +133
- Idaho Operations Office- Reflects an increase commensurate with salary adjustments. . . . . +59
- Oak Ridge Operations Office- Reflects an increase commensurate with salary adjustments. . . . . +116
- Oakland Operations Office- Reflects an increase commensurate with salary adjustments. . . . . +62

Travel

- Policy- Restores environmental program related travel to the FY 1994 level. This level maintains compliance with the President's administrative savings initiative. . . . . +114
- Human Resources and Administration- Decrease in accordance with the President's administrative savings initiative adjusted for inflation. . . . . -4
- Economic Impact and Diversity- Increase to maintain FY 1994 operating level, offset by use of unobligated balances in program support which maintains compliance with the President's administrative savings initiative. +16
- Field Management- Decrease in accordance with the President's administrative savings initiative adjusted for inflation. . . . . -1
- Chicago Operations Office- Increase for improved oversight of DOE facilities, offset by a decrease in support services which maintains compliance with President's administrative savings initiative. . . . . +295
- Idaho Operations Office- Decrease in accordance with the President's administrative savings initiative adjusted for inflation. . . . . -1

SUMMARY OF CHANGES - DEPARTMENTAL ADMINISTRATION (cont'd)

Travel (cont'd)

- Oak Ridge Operations Office- Decrease in accordance with the President's administrative savings initiative adjusted for inflation. . . . . -1

- Oakland Operations Office- Decrease in accordance with the President's administrative savings initiative adjusted for inflation. . . . . -1

Support Services

- Policy- Decrease is in accordance with the President's administrative savings initiative and support service reductions. . . . . -46

- Chief Financial Officer- Decrease is in accordance with the President's administrative savings initiative and support service reductions. . . . . -403

- Human Resources and Administration- Decrease in accordance with the President's administrative savings initiative plus a decrease of $1.5M for resource information management efficiencies, partially offset by an increase for DCAA and DLA to reduce audit backlog. . . . . -910

- General Counsel- Decrease in accordance with the President's administrative savings initiative. . . . . -3

- Economic Impact and Diversity- Increase to maintain FY 1994 operating level, offset by use of unobligated balances in program support which maintains compliance with the President's administrative savings initiative. +38

- Field Management- Increase for development of a Facilities Information Management System (FIMS) which will inventory real property in the DOE complex, and a records management system to house contractor employee case files, infrastructure acquisition, and freedom of information requests (human experimentation). . . . . +255

- Chicago Operations Office- Decrease in support services offset by travel increase to ensure oversight of DOE facilities. Decrease also reflects administrative savings and support service reductions. . . . . -498

- Idaho Operations Office- Decrease in accordance with the President's administrative savings initiative and support service reductions. . . . . -206

- Oak Ridge Operations Office- Decrease is in accordance with the President's administrative savings initiative and support service reductions. . . . . -166

- Oakland Operations Office- Increase for rent, but funding level represents FY 1993 level adjusted for the President's administrative savings initiative. . . . . +116

Program Support

- Policy, Analysis, and System Studies- Increase supports expanded role in policies regarding national security, strategic planning, DOE program evaluation, and international affairs. . . . . +1,364

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SUMMARY OF CHANGES - DEPARTMENTAL ADMINISTRATION (cont'd)

Program Support (cont'd)

- Environmental Policy Studies- Increase will allow DOE to address impacts of environmental laws, regulations, and issues, as well as technology transfer issues and analyses. . . . . +1,930
- Public Affairs- Increase to maintain FY 1994 Operating level which supports the Secretary's commitment to openness and changing DOE focus. . . . . +38
- Minority Economic Impact- Decrease is in accordance with the President's administrative savings initiative. . . -11
- Scientific and Technical Training- Decrease is in accordance with the President's administrative savings initiative and support service reductions. . . . . -37

Capital Equipment

- Chief Financial Officer- Increase reflects FY 1995 level plus inflation. . . . . +10
- Human Resources and Administration- Increase reflects FY 1995 level plus inflation. . . . . +155
- Field Management- Increase reflects FY 1995 level plus inflation . . . . . +1
- Chicago Operations Office- Increase reflects FY 1995 level plus inflation. . . . . +6
- Idaho Operations Office- Increase reflects FY 1995 level plus inflation. . . . . +10
- Oak Ridge Operations Office- Increase reflects FY 1995 level plus inflation. . . . . +15
- Oakland Operations Office- Increase reflects FY 1995 level plus inflation. . . . . +3

Cost of Work for Others

- Savannah River - Decrease reflects decreased timber operations. . . . . -500
- Albuquerque - Increase reflects current water sales forecast. . . . . +300
- Argonne - Increase required to restore budget authority to operating level due to one time use of uncosted balances in FY 1995. . . . . +215
- Brookhaven - Increase required to restore budget authority to operating level due to use of uncosted balances in FY 1995. . . . . +1,150
- Chicago- Increase related to level of materials sales. . . . . +50
- Idaho - Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity of Technology Transfer program funds. . . . . -974

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SUMMARY OF CHANGES - DEPARTMENTAL ADMINISTRATION (cont'd)

Cost of Work for Others (cont'd)

- Lawrence Berkeley - Decrease due to completion of NIH, drosophila genome experiment	-2,227
- Lawrence Livermore - Increase related to expanded seismic work	+3,398
- Oak Ridge - Decrease associated with technology transfer work to be performed on Cost of Work for Others CRADA activity or Technology Transfer program funds	-1,143
- Oak Ridge National Lab - Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds	-774
- Richland - Increase is due to additional miscellaneous work for Japan under umbrella agreement	+500
- Oakland - Decrease related to declining activities at the Stanford Linear Accelerator Center (SLAC)	-1,525

Use of Unobligated Balances

- Chief Financial Officer- Offset to support services request	-196
- Economic Impact & Diversity- Offset to program support request	-54
- Cost of Work- Partial restoration of use of FY 1995 unobligated balances	+19,438

Revenues Associated with Cost of Work for Others

- Savannah River- Decrease reflects decreased timber operations	+500
- Argonne- Increase reflects greater State of Illinois spending for coal research	-215
- Brookhaven- Increase related to University research	-413
- Chicago- Increase related to level of materials sale	-50
- Idaho- Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds	+977
- Lawrence Berkeley- Decrease due to completion of NIH drosophila genome experiment	+2,843
- Lawrence Livermore - Increase related to expanded seismic work	-3,398
- Oak Ridge- Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds	+758

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SUMMARY OF CHANGES - DEPARTMENTAL ADMINISTRATION (cont'd)

Revenues Associated with Cost of Work for Others (cont'd)

- Oak Ridge National Lab- Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds	+1,362
- Office of Scientific and Technical Information - Increase relates to current estimate of activities at the National Energy Software Center	-2
- Richland- Increase is due to additional miscellaneous work for Japan under umbrella agreement	-501
- Oakland- Decrease due to declining activities at the Stanford Linear Accelerator Center (SLAC)	+1,525

Miscellaneous Revenues

FY 1996 CONGRESSIONAL Budget Request	$ 317,138

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Personnel Compensation

II. A. Summary Table: Personnel Compensation

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Policy	10,003	12,879	13,275	+ 3
Chief Financial Officer	14,200	14,183	14,792	+ 4
Human Resources and Administration	49,663	51,704	55,074	+ 7
Congressional and Intergovermmental Affairs	4,518	4,682	5,040	+ 8
Public and Consumer Affairs	3,115	3,343	3,563	+ 7
General Counsel	10,944	11,907	13,820	+ 16
Economic Impact and Diversity	3,537	3,448	3,878	+ 12
Board of Contract Appeals	574	650	679	+ 4
Field Management	6,231	6,605	7,399	+ 12
Chicago Operations Office	16,182	17,051	17,958	+ 5
Idaho Operations Office	8,692	8,892	9,283	+ 4
Oak Ridge Operations Office	20,406	21,322	22,023	+ 3
Oakland Operations Office	13,428	13,821	14,160	+ 2
Total, Personnel Compensation	$ 161,493	$ 170,487	$ 180,944	+ 6

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Personnel Compensation			
Personnel Compensation Description	Funding for Full-time permanent (FTP) and Other than full-time permanent (OTFTP) employees -Salaries and wages -Overtime pay -Cash incentive awards -Lump sum leave payments -Senior Executive Service (SES) bonus and rank awards (DOE-wide) funded by Human Resources & Administration	Funding for Full-time permanent (FTP), Other than full-time permanent (OTFTP) employees, as well as Foreign Service Nationals (FSN) not reported to OPM: -Salaries and wages -Overtime pay -Cash incentive awards -Lump sum leave payments -Senior Executive Service (SES) bonus and rank awards (DOE-wide) funded by Human Resources & Administration	Funding for Full-time permanent (FTP), Other than full-time permanent (OTFTP) employees, as well as Foreign Service Nationals (FSN) not reported to OPM: -Salaries and wages -Overtime pay -Cash incentive awards -Lump sum leave payments -Senior Executive Service (SES and bonus and rank awards (DOE-wide) funded by Human Resources & Administration
	$ 0	$ 0	$ 0
Policy	FTE funding provides for the identification and analysis of issues that effect national and international energy policy. Functions include DOE-wide strategic planning, broad based budget planning activities, implementation of the Energy Policy Act, assessing energy market conditions, and evaluating policy options.	FTE funding provides for the identification and analysis of issues that effect national and international energy policy. Functions include DOE-wide strategic planning, broad based budget planning activities, implementation of the Energy Policy Act, assessing energy market conditions, and evaluating policy options. Three Foreign Service Nationals (FSN) in Tokyo and Moscow (not reported to OPM) are funded here. Congressional action included Environmental Policy Programs staff (25) transferred from Environmental Safety and Health (ESR&D). FTE increase (+10) for expanded international science and technology policy programs and establishment of a DOE post in Moscow.	FTE funding provides for the identification and analysis of issues that effect national and international energy policy. Functions include DOE-wide strategic planning, broad based budget planning activities, implementation of the Energy Policy Act, assessing energy market conditions, and evaluating policy options. Three Foreign Service Nationals (FSN) in Tokyo and Moscow (not reported to OPM) are funded here. Also includes Environmental Policy Programs staff (25) transferred from Environmental Safety and Health (ESR&D). FTE increase(+2) to support environmental management policy development, offset by decrease (-3) in accordance with NPR reductions.
	161.0 FTE $ 10,003	196.0 FTE $ 12,879	195.0 FTE $ 13,275

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chief Financial Officer	FTE funding provides for financial management services such as budget formulation, analysis, validation, and execution; external coordination with Members of Congress and Congressional staff members regarding appropriation issues; accounting policy; compliance reviews; and DOE-wide accounting functions.	FTE funding provides for financial management services such as budget formulation, analysis, validation, and execution; external coordination with Member of Congress and Congressional staff members regarding appropriation issues; accounting policy; compliance reviews; and DOE-wide accounting functions. FTE decrease (-12) in accordance with NPR reductions.	FTE funding provides for financial management services such as budget formulation, analysis, validation, and execution; external coordination with Members of Congress and Congressional staff members regarding appropriation issues; accounting policy; compliance reviews; and DOE-wide accounting functions. FTE decrease (-1) in accordance with NPR reductions.
	290.0 FTE $ 14,200	278.0 FTE $ 14,183	277.0 FTE $ 14,792
Human Resources and Administration	FTE funding provides for DOE-wide (overall policy) and headquarters support functions such as: personnel, employee training, labor relations, organizational management, staffing, telecommunications, freedom of information, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, and personal property management. Headquarters employees supported (6010) are housed in a variety of locations. DOE SES bonus and rank awards (except IG) are funded here. FTE level includes 77 FTEs for building delegation program activities, however, funding provided by GSA delegation appropriation.	FTE funding provides for DOE-wide (overall policy) and headquarters support functions such as: personnel, employee training, labor relations, organization management, staffing, telecommunications, freedom of information, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, and personal property management. Headquarters employees supported (6,074) are housed in a variety of locations. DOE SES bonus and rank awards (except IG) are funded here. FY 1995 Request reflected an FTE decrease (-32) in accordance with NPR reductions, partially offset by an increase of (+6) for the Energy Advisory Board transferred from Energy Research (ESR&D). Congressional action included FTEs (76) for building delegation program activities formerly funded via GSA delegation appropriation, as well as Scientific & Technical Training staff (21) transferred from the Energy Supply Research and Development appropriation. FTEs increased by eight above the FY	FTE funding provides for DOE-wide (overall policy) and headquarters support functions such as: personnel, employee training, labor relations, organizational management, staffing, telecommunications, freedom of information, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, and personal property management. Headquarters employees supported (5,963) are housed in a variety of locations. DOE SES bonus and rank awards (except IG) are funded here. Also includes FTEs (76) for building delegation program activities formerly funded via GSA delegation appropriation, as well as Scientific & Technical Training staff (21) transferred from the Energy Supply Research and Development appropriation. FTE decrease (-38) in accordance with NPR reductions, partially offset by an FTE increase (+11) to support environmental management activities.

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Human Resources and Administration (Cont'd)		1995 appropriated funds. FTE increase (+8) for quality management, Energy Advisory Board and scheduling and logistics activities.	
	966.0 FTE $ 49,663	968.0 FTE $ 51,704	941.0 FTE $ 55,074
Congressional and Intergovernmental Affairs	FTE funding provides for DOE-wide liaison with Members of Congress, Congressional staff members, State, local, and tribal governments. Liaison activities involve key DOE energy initiatives, authorizing legislation, Congressional hearings, briefings, requests and notifications.	FTE funding provides for DOE-wide liaison with Members of Congress, Congressional staff members, State, local, and tribal governments. Liaison activities involve key DOE energy initiatives, authorizing legislation, Congressional hearings, briefings, requests and notifications. FTEs increased by two above the FY 1995 appropriated funds. FTE increase (+5) for increased activities, primarily with state and local governments(+4) and disabled liaison employee (+1).	FTE funding provides for DOE-wide liaison with Members of Congress, Congressional staff members, State, local, and tribal governments. Liaison activities involve key DOE energy initiatives, authorizing legislation, Congressional hearings, briefings, requests and notifications. FTE increase (+2) to support environmental management activities.
	65.0 FTE $ 4,518	70.0 FTE $ 4,682	72.0 FTE $ 5,040
Public and Consumer Affairs	FTE funding provides for DOE-wide outreach activities to consumer, business, and community groups. Functions involve development of public information activities, press and media services, publication of special information materials, speech writing, speaker scheduling, and consumer liaison.	FTE funding provides for DOE-wide outreach activities to consumer, business, and community groups. Functions involve development of public information activities, press and media services, publication of special information materials, speech writing, speaker scheduling, and consumer liaison. FTE decrease (-2) in accordance with NPR reductions.	FTE funding provides for DOE-wide outreach activities to consumer, business, and community groups. Functions involve development of public information activities, press and media services, publication of special information materials, speech writing, speaker scheduling, and consumer liaison. FTE increase (+1) to support environmental management activities.
	56.0 FTE $ 3,115	54.0 FTE $ 3,343	55.0 FTE $ 3,563

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
General Counsel	FTE funding provides for DOE-wide legal support in environmental, conservation, and regulation matters; general law; and for the protection of DOE intellectual property. Activities include providing legal counsel on proposed legislation, regulatory compliance, general rulings, and patents, trademarks, and copyrights	FTE funding provides for DOE-wide legal support in environmental, conservation, and regulation matters; general law; and for the protection of DOE intellectual property. Activities include providing legal counsel on proposed legislation, regulatory compliance, general rulings, and patents, trademarks, and copyrights. FTE increase (+9) for additional activities in most all legal areas.	FTE funding provides for DOE-wide legal support in environmental, conservation, and regulation matters; general law; and for the protection of DOE intellectual property. Activities include providing legal counsel on proposed legislation, regulatory compliance, general rulings, and patents, trademarks, and copyrights. FTE increase (+7) to support environmental management activities and (+13) for class actions, health and safety litigation, contract reform, and administrative litigation.
	153.0 FTE $ 10,944	162.0 FTE $ 11,907	181.0 FTE $ 13,820
Economic Impact and Diversity	FTE funding provides for administering affirmative action policy, employee complaint processing, special emphasis programs, implementing minority economic impact programs, and providing support to DOE and M&O contractors regarding small and & disadvantaged business goals and concerns.	FTE funding provides for administering affirmative action policy, employee complaint processing, special emphasis programs, implementing minority economic impact programs, and providing support to DOE and M&O contractors regarding small and & disadvantaged business goals and concerns. FTE decrease (-3) in accordance with NPR reductions.	FTE funding provides for administering affirmative action policy, employee complaint processing, special emphasis programs, implementing minority economic impact programs, and providing support to DOE and M&O contractors regarding small and & disadvantaged business goals and concerns. FTE increase (+4) in support of environmental justice in the minority community.
	59.0 FTE $ 3,537	56.0 FTE $ 3,448	60.0 FTE $ 3,878
Board of Contract Appeals	FTE funding provides for trial and adjudication of DOE contract and grant disputes which arise out of acquisition and financial assistance programs.	FTE funding provides for trial and adjudication of DOE contract and grant disputes which arise out of acquisition and financial assistance programs.	FTE funding provides for trial and adjudication of DOE contract and grant disputes which arise out of acquisition and financial assistance programs.
	6.0 FTE $ 574	8.0 FTE $ 650	8.0 FTE $ 679

III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Field Management	FTE funding provides for DOE field element strategic planning and management and oversight of all Operations Offices. Functions include review of resource allocation, infrastructure requirements, landlord responsibilities, project management, facilities management, and contractor employee protection.	FTE funding provides for DOE field element strategic planning and management and oversight of all Operations Offices. Functions include review of resource allocation, infrastructure requirements, landlord responsibilities, project management, facilities management, and contractor employee protection. FTE increase (+10) for independent cost estimating and facilities management activities.	FTE funding provides for DOE field element strategic planning and management and oversight of all Operations Offices. Functions include review of resource allocation, infrastructure requirements, landlord responsibilities, project management, facilities management, and contractor employee protection. Excludes funding for the In-House Energy Management staff (-6) transferred to Energy Efficiency and Renewable Energy. Increase for Office of Employee Concerns (+6) and (+7) to support environmental management activities.
	88.0 FTE $ 6,231	98.0 FTE $ 6,605	105.0 FTE $ 7,399
Chicago Operations Office	FTE funding provides for institutional management and/or matrix support of the programmatic mission of CH, including support for all programs under the purview of CH, i.e., high energy physics and nuclear physics programs, fusion energy research and development and testing, basic energy sciences, biological and environmental research, advanced reactor base technology, security affairs, environment, safety and health, decontamination and decommissioning and other environmental restoration and waste management efforts, energy efficiency and renewable energy, cogeneration technology, technology utilization, university construction grants, and work for others programs.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of CH, including support for all programs under the purview of CH, i.e. high energy physics and nuclear physics programs, fusion energy research and development and testing, basic energy sciences, biological and environmental research, advanced reactor base technology, security affairs, environment, safety and health, decontamination and decommissioning and other environmental restoration and waste management efforts, energy efficiency and renewable energy, cogeneration technology, technology utilization, university construction grants, and work for others programs.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of CH, including support for all programs under the purview of CH, i.e., high energy physics and nuclear physics programs, fusion energy research and development and testing, basic energy sciences, biological and environmental research, advanced reactor base technology, security affairs, environment, safety and health, decontamination and decommissioning and other environmental restoration and waste management efforts, energy efficiency and renewable energy, cogeneration technology, technology utilization, university construction grants, and work for others programs.
	Federal employees supported (574) are housed in a variety of facilities including Argonne National Laboratory - East & West (ANL), Brookhaven National Laboratory (BNL), Fermi National Accelerator Laboratory (FERMILAB),	Federal employees supported (600) are housed in a variety of facilities including Argonne National Laboratory- East & West (ANL), Brookhaven National Laboratory (BNL), Fermi National Accelerator Laboratory (FERMILAB),	Federal employees supported (599) are housed in a variety of facilities including Argonne National Laboratory - East & West (ANL), Brookhaven National Laboratory (BNL), Fermi National Accelerator Laboratory (FERMILAB),

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago Operations Office (Cont'd)	Princeton Plasma Physics Laboratory (PPPL), and government owned, government operated (GOGO) laboratories - Environmental Measurements Laboratory (EML) and New Brunswick Laboratory (NBL). Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include ANL, BNL, Ames, FERMI, and PPPL (approximately 12,000 contractor employees). The office also provides support to the National Renewable Energy Laboratory (NREL). Golden Field Office, and Energy Efficiencies support offices in Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, New York, Philadelphia, San Francisco, and Seattle. Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation.	Princeton Plasma Physics Laboratory (PPPL), and government owned, government operated (GOGO) laboratories - Environmental Measurements Laboratory, and New Brunswick Laboratory (NBL). Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include ANL, BNL, Ames, FERMI, and PPPL (approximately 12,000 contractor employees). The office also provides support to the National Renewable Energy Laboratory (NREL), Golden Field Office, and Energy Efficiencies support offices in Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, New York, Philadelphia, San Francisco, and Seattle. Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation. FTE decrease (-10) in accordance with NPR reductions.	Princeton Plasma Physics Laboratory (PPPL), and government owned, government operated (GOGO) laboratories - Environmental Measurements Laboratory (EML) and New Brunswick Laboratory (NBL). Support functions include budget and accounting, legal patent, personnel, labor relations, staffing organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include ANL, BNL, Ames, FERMI, and PPPL (approximately 12,000 contractor employees). Support to the NREL and Energy Efficiencies Support offices is provided by the Golden Field Office. Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation. FTE decrease (-1) in accordance with NPR reductions.
	329.0 FTE $ 16,182	319.0 FTE $ 17,051	318.0 FTE $ 17,958

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho Operations Office	FTE funding provides for institutional management and/or matrix support of the programmatic mission of ID, including support for all programs under the purview of ID, i.e., nuclear safety, reactor development, reactor operations and training, spent nuclear fuels material processing, environmental remediation, waste management, and technology development.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of the ID, including support for all programs under the purview of ID, e.g., nuclear safety, reactor development, reactor operations and training, spent nuclear fuels material processing, environmental remediation, waste management and technology development.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of ID, including support for all programs under the purview of ID, i.e., nuclear safety, reactor development, reactor operations and training, spent nuclear fuels material processing, environmental remediation, waste management, and technology development.
	Federal employees supported (465) are housed in two buildings in Idaho Falls and various locations at the Idaho National Engineering Laboratory (INEL).	Federal employees supported (462) are housed in two building s in Idaho Falls and various locations at the Idaho National Engineering Laboratory (INEL).	Federal employees supported (461) are housed in two buildings in Idaho Falls and various locations at the Idaho National Engineering Laboratory (INEL).
	Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractor in the performance of activities in their respective functional area. M&O contractor is Lockheed Idaho Technologies Company (LITCO) (approximately 12,000 contractor employees). The office also oversees numerous prime contractors, outside the purview of the M&O, for such activities as conservation grants to state and local governments and universities; environmental issues with state and local governments, Indian Tribes, and the Environmental Protection Agency; and support service	Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractor in the performance of activities in their respective functional area. M&O contractor is Lockheed Idaho Technologies Company (LITCO) (approximately 12,000 contractor employees). The office also oversees numerous prime contractors, outside the purview of the M&O, for such activities as conservation grants to state and local governments and universities; environmental issues with state and local governments, Indian Tribes, and the Environmental Protection Agency; and support services	Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractor in the performance of activities in their respective functional area. M&O contractor is Lockheed Idaho Technologies company (LITCO) (approximately 12,000 contractor employees). The office also oversees numerous prime contractors, outside the purview of the M&O, for such activities as conservation grants to state and local governments and universities; environmental issues with state and local governments, Indian Tribes, and the Environmental Protection Agency; and support service

III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho Operations Office (Cont'd)	contractors for environmental impact statements. Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation	contractors for environmental impact statements. Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation. FTE decrease (-4) in accordance with NPR reductions.	contractors for environmental impact statements. Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation.
	172.0 FTE $ 8,692	168.0 FTE $ 8,892	168.0 FTE $ 9,283
Oak Ridge Operations Office	FTE funding provides for institutional management and/or matrix support of the programmatic mission of ORO, including support for all programs under the purview of ORO, i.e., defense program activities, energy technology research and development, environmental restoration and waste management, education and training, technical assistance, and technology transfer.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of ORO, including support for all programs under the purview of ORO, i.e., defense program activities, energy technology research and development, environmental restoration and waste management, education and training, technical assistance, and technology transfer.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of ORO, including support for all programs under the purview of ORO, i.e., defense program activities, energy technology research and development, environmental restoration and waste management, education and training, technical assistance, and technology transfer.
	Federal employees supported (715) are housed in a variety of facilities including the Federal Building, Y-12, K-25, Paducah, Portsmouth, and the Oak Ridge National Laboratory site offices; the Continuous Electron Beam Accelerator Facility (CEBAF); Weldon Spring Site Remedial Action Program site (WSSRAO); and the Superconducting Super Collider (SSC) Project Office.	Federal employees supported (779) are housed in a variety of facilities including the Federal Building, Y-12, K-25, Paducah, Portsmouth, and the Oak Ridge National Laboratory site offices; the Continuous Electron Beam Accelerator Facility (CEBAF); Weldon Spring Site Remedial Action Program Site (WSSRAO); and the Superconducting Super Collider (SSC) Project Office.	Federal employees supported (665) are housed in a variety of facilities including the Federal Building, Y-12, K-25, Paducah, Portsmouth, and the Oak Ridge National Laboratory site offices; the Continuous Electron Beam Accelerator Facility (CEBAF); Weldon Spring Site Remedial Action Program Site (WSSRAO); and the Superconducting Super Collider (SSC) Project Office.
	Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property	Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property	Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge Operations Office (Cont'd)	management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include Martin Marietta Energy Systems Inc., Oak Ridge Institute of Science and Energy, MK-Ferguson of Oak Ridge Company, and Johnson Controls (approximately 20,000 contractor employees). Oversight includes the development of guidance and policies, monitoring of performance; and input to the award fee evaluation. FTE level includes 4 FTEs for building delegation program activities, however, funding provided by GSA delegation appropriation.	management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include Martin Marietta Energy Systems, Inc., Oak Ridge Institute of Science and Energy, MK-Ferguson of Oak Ridge Company, and Johnson Controls (approximately 20,000 contractor employees.) Oversight includes the development of guidance and policies, monitoring of performance; and input to the award fee evaluation. Funding includes FTEs (4) for building delegation activities previously funded by GSA transfer appropriation, offset by FTE decrease (-6) in accordance with NPR reductions.	management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include Martin Marietta Energy Systems, Inc., Oak Ridge Institute of Science and Energy, MK-Ferguson of Oak Ridge Company, and Johnson Controls (approximately 20,000 contractor employees). Oversight includes the development of guidance and policies, monitoring of performance; and input to the award fee evaluation. Funding includes FTEs (4) for building delegation activities previously funded by GSA transfer appropriation. FTE decrease (-4) in accordance with NPR reductions.
	414.0 FTE $ 20,406	408.0 FTE $ 21,322	404.0 FTE $ 22,023
Oakland Operations Office	FTE funding provides for institutional management and/or matrix support of the programmatic mission of OAK, including support for all programs under the purview of OAK, i.e., defense programs research and development, high energy physics and nuclear physics programs, fusion energy research and development, basic energy science, biological and environmental research, nuclear energy and uranium-atomic vapor laser isotope-separation (U-AVLIS) programs, decontamination and decommissioning and other environmental restoration and waste management efforts, energy efficiency and renewable energy, and fossil energy programs, technology transfer, and work for others programs.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of OAK, including support for all programs under the purview of OAK, i.e., defense programs research and development, high energy physics and nuclear physics programs, fusion energy and development, basic energy science, biological and environmental research, nuclear energy and uranium-atomic vapor laser isotope-separation (U-AVLIS) programs, decontamination and decommissioning and other environmental restoration and waste management efforts, energy efficiency and renewable energy, and fossil energy programs, technology transfer, and work for others programs.	FTE funding provides for institutional management and/or matrix support of the programmatic mission of OAK, including support for all programs under the purview of OAK, i.e., defense programs research and development, high energy physics and nuclear physics programs, fusion energy research and development, basic energy science, biological and environmental research, nuclear energy and uranium-atomic vapor laser isotope-separation (U-AVLIS) programs, decontamination and decommissioning and other environmental restoration and waste management efforts, energy efficiency and renewable energy, and fossil energy programs, technology transfer, and work for others programs.

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office (Cont'd)	Federal employees supported (406) are housed in a variety of facilities including the Federal Building, Lawrence Livermore National Laboratory (LLNL), Lawrence Berkeley Laboratory (LBL), Stanford Linear Accelerator Center (SLAC), and the Energy Technology Engineering Center (ETEC). Support functions include budget and accounting, legal patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include LLNL, LBL, SLAC, and ETEC (approximately 12,800 contractor employees). The office also oversees DOE research at the Laboratory of Radiobiology and Environmental Health (UCSS), the Laboratory of Laser Energies (University of Rochester). Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation.	Federal employees supported (441) are housed in a variety of facilities including the Federal Building, Lawrence Livermore National Laboratory (LLNL), Lawrence Berkeley Laboratory (LBL), Stanford Linear Accelerator Center (SLAC), and the Energy Technology Engineering Center (ETEC). Support functions include budget and accounting, legal, patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include LLNL, LBL, SLAC, and ETEC (approximately 12,800 contractor employees). The office also oversees DOE research at the Laboratory of Radiobiology and Environmental Health (UCSS), the Laboratory of Laser Energies (University of Rochester). Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation. FTE increase (+8) due to increase in Federal employees supported.	Federal employees supported (440) are housed in a variety of facilities including the Federal Building, Lawrence Livermore National Laboratory (LLNL), Lawrence Berkeley Laboratory (LBL), Stanford Linear Accelerator Center (SLAC), and the Energy Technology Engineering Center (ETEC). Support functions include budget and accounting, legal patent, personnel, labor relations, staffing, organizational management, freedom of information, telecommunications, space management, logistical services, printing, automated data processing development and acquisition, building operations, procurement acquisition, contract management and reform, quality management, personal property management, and environmental health and safety assessment. In addition, matrix FTEs perform oversight of the DOE Management and Operating (M&O) contractors in the performance of activities in their respective functional area. M&O contractors include LLNL, LBL, SLAC, and ETEC (approximately 12,800 contractor employees). The office also oversees DOE research at the Laboratory of Radiobiology and Environmental Health (UCSS), the Laboratory of Laser Energies (University of Rochester). Oversight includes the development of guidance and policies, monitoring of performance, and input to the award fee evaluation. FTE decrease (-1) in accordance with NPR reductions.

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III. Personnel Compensation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office (Cont'd)	246.0 FTE $ 13,428	254.0 FTE $ 13,821	253.0 FTE $ 14,160
Personnel Compensation	3005.0 FTE $ 161,493	3039.0 FTE $ 170,487	3037.0 FTE $ 180,944

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Benefits

II. A. Summary Table: Benefits

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
	0	0		
Policy	1,746	2,183	2,240	+ 3
Chief Financial Officer	2,498	2,437	2,531	+ 4
Human Resources and Administration	11,172	11,901	12,647	+ 6
Congressional and Intergovernmental Affairs	788	788	839	+ 6
Public and Consumer Affairs	544	553	584	+ 6
General Counsel	1,859	1,922	2,183	+ 14
Economic Impact and Diversity	593	564	624	+ 11
Board of Contract Appeals	92	100	105	+ 5
Field Management	1,080	1,111	1,222	+ 10
Chicago Operations Office	3,004	3,023	3,156	+ 4
Idaho Operations Office	1,578	1,678	1,737	+ 4
Oak Ridge Operations Office	3,703	3,775	3,891	+ 3
Oakland Operations Office	2,119	2,364	2,426	+ 3
Total, Benefits	$ 30,776	$ 32,399	$ 34,185	+ 6

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Benefits			
Benefits Description	Funding for the employer's share of employees': -Retirement: Civil Service Retirement System (CSRS) Federal Employees Retirement System (FERS) Thrift Savings Plan (TSP) Federal Insurance Contribution Act (FICA) Other: Life insurance Health insurance Public transportation subsidy Permanent change of station -Sale of residence -Temporary quarters Accident compensation (DOE-wide, except PMAs)- funded by Human Resources & Administration -Former Personnel: Severance pay (involuntary separation) Unemployment compensation Voluntary separation incentives 9% of CSRS employees basic pay to CSRS fund for employees who took the early out under the buyout authority.	Funding for the employer's share of employees': -Retirement: Civil Service Retirement System (CSRS) Federal Employees Retirement System (FERS) Thrift Savings Plan (TSP) Federal Insurance Contribution Act (FICA) Other: Life insurance Health Insurance Public transportation subsidy Permanent change of station -Sale of residence -Temporary quarters Accident compensation (DOE-wide, except PMAs)- funded by Human Resources & Administration -Former Personnel: Severance pay (involuntary separation) Unemployment compensation Voluntary separation incentives 9% of CSRS employees basic pay to CSRS fund for employees who took the early out under the buyout authority $80 payments to CSRS fund for currently employed CSRS and FERS employees	Funding for the employer's share of employees': -Retirement: Civil Service Retirement System (CSRS) Federal Employees Retirement System (FERS) Thrift Savings Plan (TSP) Federal Insurance Contribution Act (FICA) Other: Life insurance Health insurance Public transportation subsidy Permanent change of station -Sale of residence -Temporary quarters Accident compensation (DOE-wide, except PMAs)- funded by Human Resources & Administration -Former Personnel: Severance pay (involuntary separation) Unemployment compensation $80 payments to CSRS fund for currently employed CSRS and FERS employees
	$ 0	$ 0	$ 0
Policy	$ 1,746	$ 2,183	$ 2,240
Chief Financial Officer	$ 2,498	$ 2,437	$ 2,531

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III. Benefits (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Human Resources and Administration	$ 11,172	$ 11,901	$ 12,647
Congressional and Intergovernmental Affairs	$ 788	$ 788	$ 839
Public and Consumer Affairs	$ 544	$ 553	$ 584
General Counsel	$ 1,859	$ 1,922	$ 2,183
Economic Impact and Diversity	$ 593	$ 564	$ 624
Board of Contract Appeals	$ 92	$ 100	$ 105
Field Management	$ 1,080	$ 1,111	$ 1,222
Chicago Operations Office	$ 3,004	$ 3,023	$ 3,156
Idaho Operations Office	$ 1,578	$ 1,678	$ 1,737
Oak Ridge Operations Office	$ 3,703	$ 3,775	$ 3,891
Oakland Operations Office	$ 2,119	$ 2,364	$ 2,426
Benefits	$ 30,776	$ 32,399	$ 34,185

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Travel

II. A. Summary Table: Travel

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Policy	$ 620	$ 671	$ 785	+ 17
Chief Financial Officer	234	234	234	0
Human Resources and Administration	1,946	2,192	2,188	0
Congressional and Intergovernmental Affairs	69	69	69	0
Public and Consumer Affairs	91	97	97	0
General Counsel	160	170	170	0
Economic Impact and Diversity	113	114	130	+ 14
Board of Contract Appeals	6	7	7	0
Field Management	313	320	319	0
Chicago Operations Office	497	530	825	+ 56
Idaho Operations Office	442	471	470	0
Oak Ridge Operations Office	403	429	428	0
Oakland Operations Office	423	451	450	0
Total, Travel	$ 5,317	$ 5,755	$ 6,172	+ 7

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Travel			
Policy	Funding for staff travel to all DOE sites for strategic planning and oversight purposes; to attend energy policy development meetings nationwide; employee training travel; and travel associated with permanent change of station (PCS). International travel is frequent in the development and implementation of international energy policy; matters concerning international energy-related negotiations, conferences and meetings; and represents the department as members of international energy organizations.	Funding for staff travel to all DOE sites for strategic planning and oversight purposes; to attend energy policy development meetings nationwide; employee training travel; and travel associated with permanent change of station (PCS). International travel is frequent in the development and implementation of international energy policy; matters concerning international energy-related negotiations, conferences and meetings; and represents the department as members of international energy organizations. Increase reflects international travel in support of environmental programs transferred from Environmental Safety and Health (ESR&D) such as: participation on behalf of DOE, or the U.S. Government, at various host foreign governments concerning international environmental issues; represents the department as members of international energy and environmental organizations.	Funding for staff travel to all DOE sites for strategic planning and oversight purposes; to attend energy policy development meetings nationwide; employee training travel; and travel associated with permanent change of station (PCS). International travel is frequent in the development and implementation of international energy policy; matters concerning international energy-related negotiations, conferences and meetings; and represents the department as members of international energy organizations. Includes international travel in support of environmental programs such as: participation on behalf of DOE, or the U.S. Government, at various host foreign governments concerning international environmental issues; represents the department as members of international energy and environmental organizations. Increase restores environmental program related travel to the FY 1994 operating level (funded in ESR&D). This level reflects a decrease from the FY 1993 level in accordance with the President's administrative savings initiative.
	$ 620	$ 671	$ 785

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III. Travel (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chief Financial Officer	Funding for staff travel for budget validations; analyst site reviews; coordination of financial and accounting policies, compliance reviews, financial and accounting development, operations and reporting; oversight of contractor accounting structures; CFO and budget conference attendance; employee training travel; travel associated with permanent change of station (PCS); and travel of Congressional staff to DOE sites.	Funding for staff travel for budget validations; analyst site reviews; coordination of financial and accounting policies, compliance reviews, financial and accounting development, operations and reporting; oversight of contractor accounting structures; CFO and budget conference attendance; employee training travel; travel associated with permanent change of station (PCS); and travel of Congressional staff to DOE sites.	Funding for staff travel for budget validations; analyst site reviews; coordination of financial and accounting policies, compliance reviews, financial and accounting development, operations and reporting; oversight of contractor accounting structures; CFO and budget conference attendance; employee training travel; travel associated with permanent change of station (PCS); and travel of Congressional staff to DOE sites.
	$ 234	$ 234	$ 234
Human Resources and Administration	Funding for staff travel for oversight reviews of contractor purchasing and property management systems to ensure accountability; field information resource management meetings and conferences; DOE training travel for purposes of developing and facilitating DOE-wide training courses, DOE recruitment travel for intern programs and special occupations; quality management field interface; travel associated with scheduling, logistics, and support for Secretarial trips; HR and select program employee training travel; and travel associated with permanent change of station (PCS). Also includes the DOE shuttle bus service, rental of vehicles from the GSA motor pool, lease of DOE fleet, and charter of aircraft or buses.	Funding for staff travel for oversight reviews of contractor purchasing and property management systems to ensure accountability; field information resource management meetings and conferences; DOE training travel for purposes of developing and facilitating DOE-wide training courses, DOE recruitment travel for intern programs and special occupations; DOE advisory board activities; quality management field interface; travel associated with scheduling logistics, and support for Secretarial trips, HR and select program employee training travel; and travel associated with permanent change of station (PCS). Also includes the DOE shuttle bus service, rental of vehicles from the GSA motor pool, lease of DOE fleet, and charter of aircraft or buses. Increase reflects travel in support of Scientific and Technical staff transferred from ESR&D; and DOE advisory board activities transferred from Energy Research.	Funding for staff travel for oversight reviews of contractor purchasing and property management systems to ensure accountability; field information resource management meetings and conferences; DOE training travel for purposes of developing and facilitating DOE-wide training courses, DOE recruitment travel for intern programs and special occupations; DOE advisory board activities; quality management field interface; travel associated with scheduling, logistics, and support for Secretarial trips; HR and select program training travel; and travel associated with permanent change of station (PCS). Also includes the DOE shuttle bus service, rental of vehicles from the GSA motor pool, lease of DOE fleet, and charter of aircraft or buses. Funds travel in support of Scientific and Technical staff transferred from ESR&D.
	$ 1,946	$ 2,192	$ 2,188

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III. Travel (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Congressional and Intergovernmental Affairs	Funding for staff travel to DOE sites relative to energy issues of particular interest to Congress, to attend meetings with state and local governments, American Indian tribal officials, support for Secretarial trips and Congressional staff visits to DOE sites, employee training travel, and travel associated with permanent change of station (PCS).	Funding for staff travel to DOE sites relative to energy issues of particular interest to Congress, to attend meetings with state and local governments, American Indian tribal officials, support for Secretarial trips and Congressional staff visits to DOE sites, employee training travel, and travel associated with permanent change of station (PCS).	Funding for staff travel to DOE sites relative to energy issues of particular interest to Congress, to attend meetings with state and local governments, American Indian tribal officials, support for Secretarial trips and Congressional staff visits to DOE sites, employee training travel, and travel associated with permanent change of station (PCS).
	$ 69	$ 69	$ 69
Public and Consumer Affairs	Funding for staff travel to arrange and lead all DOE media events, accompanies the Secretary, Deputy Secretary, and Under Secretary on all public appearances; meets with consumer, business and community groups to convey DOE initiatives and policies; serves as focal point for the DOE Public Participation Program through nationwide public outreach efforts; employee training travel, and travel associated with permanent change of station (PCS).	Funding for staff travel to arrange and lead all DOE media events, accompanies the Secretary, Deputy Secretary, and Under Secretary on all public appearances; meets with consumer, business and community groups to convey DOE initiatives and policies; serves as focal point for the DOE Public Participation Program through nationwide public outreach efforts; employee training travel, and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	Funding for staff travel to arrange and lead all DOE media events, accompanies the Secretary, Deputy Secretary, and Under Secretary on all public appearances; meets with consumer, business and community groups to convey DOE initiatives and policies; serves as focal point for the DOE Public Participation Program through nationwide public outreach efforts; employee training travel, and travel associated with permanent change of station (PCS).
	$ 91	$ 97	$ 97
General Counsel	Funding for attorneys to attend hearings, court trials, proceedings, and take depositions at all DOE sites. Includes funding for conference attendance, employee training travel, and travel associated with permanent change of station (PCS).	Funding for attorneys to attend hearings, court trials, proceedings, and take depositions at all DOE sites. Includes funding for conference attendance, employee training travel, and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	Funding for attorneys to attend hearings, court trials, proceedings, and take depositions at all DOE sites. Includes funding for conference attendance, employee training travel, and travel associated with permanent change of station (PCS).

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III. Travel (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
General Counsel (Cont'd)			
Economic Impact and Diversity	$ 160 Funds for staff travel to DOE sites to perform site visits regarding socioeconomic research and analysis and minority educational institutional assistance activities, conduct Federal employee complaint investigations, meets with minority communities and institutions regarding energy issues which impact minority communities, provide support on Secretarial trips, sponsor the small and disadvantaged business conference, employee training travel, and travel associated with permanent change of station (PCS).	$ 170 Funds for staff travel to DOE sites to perform site visits regarding socioeconomic research and analysis and minority educational institution assistance activities, conduct Federal employee complaint investigations, meets with minority communities and institutions regarding energy issues which impact minority communities, provide support on Secretarial trips, sponsor the small and disadvantaged business conference, employee training travel, and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	$ 170 Funds for staff travel to DOE sites to perform site visits regarding socioeconomic research and analysis and minority educational institution assistance activities, conduct Federal employee complaint investigations, meets with minority communities and institutions regarding energy issues which impact minority communities, provide support on Secretarial trips, sponsor the small and disadvantaged business conference, employee training travel, and travel associated with permanent change of station (PCS). Increase to maintain FY 1994 operating level, offset by use of unobligated balances in program support; thus maintaining compliance with the President's administrative savings initiative.
Board of Contract Appeals	$ 113 Funding for staff travel to conduct trials, typically at courthouses and other neutral sites. These trials are conducted to resolve contract and grant disputes which arise out of acquisition and financial assistance programs. Also funds employee training travel.	$ 114 Funding for staff travel to conduct trials, typically at courthouses and other neutral sites. These trials are conducted to resolve contract and grant disputes which arise out of acquisition and financial assistance programs. Also funds employee training travel. Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	$ 130 Funding for staff travel to conduct trials, typically at courthouses and other neutral sites. These trials are conducted to resolve contract and grant disputes which arise out of acquisition and financial assistance programs. Also funds employee training travel.
	$ 6	$ 7	$ 7

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III. Travel (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Field Management	Funding for staff travel to all DOE field elements for purposes of: strategic planning, management coordination and oversight, infrastructure and landlord issues, project management reviews, conduct of independent cost estimates, meetings with utility companies, contractor employee compliant investigations, employee training travel, and travel associated with permanent change of station (PCS).	Funding for staff travel to all DOE field elements for purposes of: strategic planning, management coordination and oversight, infrastructure and landlord issues, project management reviews, conduct of independent cost estimates, meetings with utility companies, contractor employee compliant investigations, employee training travel, and travel associated with permanent change of station (PCS).	Funding for staff travel to all DOE field elements for purposes of: strategic planning, management coordination and oversight, infrastructure and landlord issues, project management reviews, conduct of independent cost estimates, meetings with utility companies, contractor employee compliant investigations, employee training travel, and travel associated with permanent change of station (PCS).
	$ 313	$ 320	$ 319
Chicago Operations Office	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS). Increase will allow improved oversight of DOE facilities supported by CH which are located in areas all over the U.S. Increase offset by decrease in support services.
	$ 497	$ 530	$ 825

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III. Travel (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho Operations Office	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).
	$ 442	$ 471	$ 470
Oak Ridge Operations Office	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administration savings initiative.	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).
	$ 403	$ 429	$ 428

III. Travel (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS). Funding reflects decrease from FY 1993 level in accordance with the President's administrative savings initiative.	Funding for travel to headquarters to participate on task teams, work various issues, and formulate policy. Funds travel for compliance reviews and oversight of contractors' implementation of DOE orders and applicable state, Federal, and other regulatory requirements. Provides for employee attendance at conferences such as CFO, budget and accounting, small and disadvantaged business, procurement, and safety and health. Also funds employee training travel and travel associated with permanent change of station (PCS).
	$ 423	$ 451	$ 450
Travel	$ 5,317	$ 5,755	$ 6,172

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Support Services

II. A. Summary Table: Support Services

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Policy	$ 1,017	$ 935	$ 889	- 5
Chief Financial Officer	7,074	7,476	7,073	- 5
Human Resources and Administration	122,172	120,790	119,860	- 1
Congressional and Intergovernmental Affairs	5	5	5	0
Public and Consumer Affairs	4	4	4	0
General Counsel	1,622	1,665	1,662	0
Economic Impact and Diversity	265	227	265	+ 17
Board of Contract Appeals	1	1	1	0
Field Management	6,750	7,381	7,636	+ 3
Chicago Operations Office	8,005	8,202	7,704	- 6
Idaho Operations Office	13,300	13,034	12,828	- 2
Oak Ridge Operations Office	9,548	10,729	10,563	- 2
Oakland Operations Office	7,237	7,881	7,997	+ 1
Total, Support Services	$ 177,000	$ 178,330	$ 176,507	- 1

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Support Services			
Policy	Funding for reimbursement to the Department of State for support to DOE overseas offices in Tokyo and Paris, embassy related services for DOE delegations, such as interpreters, drivers, rental cars and facilities. Includes translation services for official delegation meetings to DOE; support services for the Foreign Visits and Assignments System and the Foreign Travel System data entry; system enhancement and maintenance are funded by Human Resources and Administration. Also provides for employee development and training. Includes funding for three Foreign Service Nationals (FSNs) in Tokyo.	Funding for reimbursement to the Department of State for DOE overseas offices in Tokyo, Paris, and Moscow; embassy related services for DOE delegations, such as interpreters, drivers, rental cars and facilities. Includes translation services for official delegation meetings to DOE; support services for the Foreign Visits and Assignments Systems and the Foreign Travel System data entry; system enhancement and maintenance are funded by Human Resources and Administration. Also provides for employee development and training. Includes support for Environmental Policy Program staff (25) transferred from Environmental Safety and Health (ESR&D). Decrease for Tokyo FSNs'salaries partially offset by establishment of Moscow office. Increase for transfer of ESR&D function offset by administrative savings and support service reductions.	Funding for reimbursement to the Department of State for DOE overseas offices in Tokyo, Paris, and Moscow; embassy related services for DOE delegations, such as interpreters, drivers, rental cars and facilities. Includes translation services for official delegation meetings to DOE; support services for the Foreign Visits and Assignments System and the Foreign Travel System data entry; system enhancement and maintenance are funded by Human Resources and Administration. Also provides for employee development and training. Includes support for Environmental Policy Program staff (25) transferred from Environmental Safety & Health (ESR&D). Decrease reflects administrative savings and support service reductions.
	$ 1,017	$ 935	$ 889
Chief Financial Officer	Funding for consulting services in the areas of: Financial management employee development training program (self studies); Secretary's Annual Report to Congress; CFO Annual Report; DOE Accounting Practices and Procedures Handbook; actuarial services; budget guidance, reviews, desk procedures, B&R crosswalks to decision units, analyses and reports on allocable costs; and compliance reviews. ADP support activities include: development, enhancement and maintenance of: o Budget Analysis Review and Reporting System (BARRS)	Funding for consulting services in the areas of: Financial management employee development training program (self studies); Secretary's Annual Report to Congress; CFO Annual Report; DOE Accounting Practices and Procedures Handbook; actuarial services; budget guidance, reviews, desk procedures, B&R crosswalks to decision units, analyses and reports on allocable costs; and compliance reviews. ADP support activities include: development, enhancement and maintenance of: o Budget Analysis Review and Reporting System (BARRS)	Funding for consulting services in the areas of: Financial management employee development training program (self studies); Secretary's Annual Report to Congress; CFO Annual Report; DOE Accounting Practices and Procedures Handbook; budget guidance, reviews, desk procedures, B&R crosswalks to decision units, analyses and reports on allocable costs; and compliance reviews. ADP support activities include: development, enhancement and maintenance of: o Budget Analysis Review and Reporting System (BARRS)

III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chief Financial Officer (Cont'd)	-automated budget formulation system (HQs, PMAs, and four field offices) o Budget Table System (BTS) -automated DOE central repository of budget related financial information (interfaces with OMB) o Funds Distribution System (FDS) -automated DOE budget execution system financial plan) o Project Data System (PDS) -automated DOE centralized database of project data sheets (interfaces with FDS. BARRS, FIS, MARS) o Departmental Audit Review and Tracking System (DARTS) -automated DOE internal and external audit and review system o Budget and Reporting Codes (BARC) -automated DOE budget execution coding system o Consent Order Tracking System (COTS) -automated DOE Consent Order System o Departmental Integrated Standardized Core Accounting System (DISCAS) -automated DOE HQs accounting information system (interfaces with FIS) o Financial Information System (FIS) -automated DOE accounting information system o Management Analysis Reporting System (MARS) -redesign of FIS to integrate FIS and DISCAS into MARS o Labor Distribution System (LDS) -automated DOE payroll accounting system o Travel Manager System (TMS) -automated HQs travel information and processing system	-automated budget formulation system o Budget Table System (BTS) -automated DOE central repository of budget related financial information (interfaces with OMB) o Funds Distribution System (FDS) -automated DOE budget execution system (financial plan) o Project Data System (PDS) -automated DOE centralized database of project data sheets (interfaces with FDS. BARRS, FIS, MARS) o Departmental Audit Review and Tracking System (DARTS) -automated DOE internal and external audit and review system o Budget and Reporting Codes (BARC) -automated DOE budget execution coding system o Consent Order Tracking System (COTS) -automated DOE Consent Order Sytem o Departmental Integrated Standardized Core Accounting System (DISCAS) -automated DOE HQs accounting information system (interfaces with FIS) o Financial Information System (FIS) -automated DOE accounting information system o Management Analysis Reporting System (MARS) -redesign of FIS to integrate FIS and DISCAS into MARS o Labor Distribution System (LDS) -automated DOE payroll accounting system o Travel Manager System (TMS) -automated HQs travel information and processing system o Unexpended Planning, Projection, Evaluation and Reporting System (UPPERS) -automated DOE systems for	-automated budget formulation system o Budget Table System (BTS) -automated DOE central repository of budget related financial information (interfaces with OMB) o Funds Distribution System (FDS) -automated DOE budget execution system (financial plan) o Project Data System (PDS) -automated DOE centralized database of project data sheets (interfaces with FDS. BARRS, FIS, MARS) o Departmental Audit Review and Tracking System (DARTS) -automated DOE internal and external audit and review system o Budget and Reporting Codes (BARC) -automated DOE budget execution coding system o Consent Order Tracking System (COTS) -automated DOE Consent Order System o Departmental Integrated Standardized Core Accounting System (DISCAS) -automated DOE HQs accounting information system (interfaces with FIS) o Financial Information System (FIS) -automated DOE accounting information system o Management Analysis Reporting System (MARS) -redesign of FIS to integrate FIS and DISCAS into MARS o Labor Distribution System (LDS) -automated DOE payroll accounting system o Travel Manager System (TMS) -automated HQs travel information and processing system o Unexpended Planning, Projection, Evaluation and Reporting System (UPPERS) -automated DOE system for estimating

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III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chief Financial Officer (Cont'd)		estimating and warehousing costs and obligations	and warehousing costs and obligations
	Automated Data Processing Activities: o Contractor ADP data entry support staff (on site) o Contractor technical support for Hewlett Packard systems (DISCAS,MARS) o Local Area Network (LAN) and AOSS workstation acquisition, upgrade and maintenance o Hewlett Packard system (production and testing) hardware/software maintenance o Timesharing services o HQs-Field Budget Systems connectivity and testing o LAN hardware and software acquisition	Automated Data Processing Activities: o Contractor ADP data entry support staff (on site) o Contractor technical support for Hewlett Packard systems (DISCAS,MARS) o Local Area Network (LAN) and AOSS workstation acquisition, upgrade and maintenance o Hewlett Packard system (production and testing) hardware/software maintenance o Timesharing services o HQs-Field Budget Systems connectivity and testing o LAN hardware and software acquisition	Automated Data Processing Activities: o Contractor ADP data entry support staff (on site) o Contractor technical support for Hewlett Packard systems (DISCAS,MARS) o Local Area Network (LAN) and AOSS workstation acquisition, upgrade and maintenance o Hewlett Packard system (production and testing) hardware/software maintenance o Timesharing services o HQs-Field Budget Systems connectivity and testing o LAN hardware and software acquisition
		Increase for the Unexpended Planning, Projection, Evaluation and Reporting System (UPPERS) and imaging documents to reduce stored material. This level reflects administrative savings from FY 1993 in accordance with the President's initiative.	Decrease in accordance with the President's administrative savings initiative and support service reductions in response to DOE initiatives. As a result, actuarial support for M&O post retirement benefit valuations and ADP support activities will be reduced by 8% at the net level.
	$ 7,074	$ 7,476	$ 7,073

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III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Human Resources and Administration	Funding provides for centralized support services to Headquarters. Support services include: rent (GSA and other) and utilities, telecommunications, postage, printing and reproduction (<$500), building operations, logistical services, automated data processing development and acquisition (for programs funded in this appropriation except: Chief Financial Officer and Field Management), employee development and training (Headquarters quality management and select DOE wide training programs), health services, permanent change of station (PCS) shipment and storage of household goods and relocation contract services (for programs funded in this appropriation), supplies and furniture, and vehicle and office equipment maintenance. Includes contractor support for Headquarters Procurement Operations, audit services from the Defense Contract Audit Agency (DCAA) ($7.1M appropriated, $8.7M obligated), Department of Health and Human Services (HHS) and Defense Logistics Agency (DLA) (.4M) for audits required to award, administer and closeout DOE contracts and subcontracts, and human resource management programs for management and operating contractor personnel. Also includes funding for DOE official reception and representation expenses ($35,000). Note that headquarters support is supplemented by support funds budgeted by the: Energy Information Administration, Economic Regulatory Administration, Hearings and Appeals, Civilian Radioactive Waste Management, and the Emergency Preparedness appropriation. Includes funding for GSA facility fund and GSA delegation activities.	Funding provides for centralized support services to Headquarters. Support services include: rent (GSA and other) and utilities, telecommunications, postage, printing and reproduction (<$500), building operations, logistical services, automated data processing development and acquisition (for programs funded in this appropriation except: Chief Financial Officer and Field Management), employee development and training (Headquarters quality management and select DOE wide training programs), health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services (for programs funded in this appropriation), supplies and furniture, and vehicle and office equipment maintenance. Includes contractor support for Headquarters Procurement Operations, audit services from the Defense Contract Audit Agency (DCAA) ($8.7M), Department of Health and Human Services (HHS), and Defense Logistics Agency (DLA) (.4M) for audits required to award, administer and closeout DOE contracts and subcontracts, and human resource management programs for management and operating contractor personnel). Also includes funding for DOE official reception and representation expenses ($35,000). Note that headquarters support is supplemented by support funds budgeted by the: Energy Information Administration, Economic Regulatory Administration, Hearings and Appeals, Civilian Radioactive Waste Management, and the Emergency Preparedness appropriation. Decrease due to rent reduction for GSA facility fund and GSA delegation (-5.9M). Decrease partially offset by increase	Funding provides for centralized support services to Headquarters. Support services include : rent (GSA and other) and utilities, telecommunications, postage, printing and reproduction (<$500), building operations, logistical services, automated data processing development and acquisition (for programs funded in this appropriation except: Chief Financial Officer and Field Management), employee development and training (Headquarters quality management and select DOE wide training programs), health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services (for programs funded in this appropriation), supplies and furniture, and vehicle and office equipment maintenance. Includes contractor support for Headquarters Procurement Operations, audit services from the Defense Contract Audit Agency (DCAA) ($9.3M), Department of Health and Human Services (HHS) and Defense Logistics Agency (DLA) (.5M) for audits required to award, administer and closeout DOE contracts and subcontracts, and human resource management programs for management and operating contractor personnel). Also includes funding for DOE official reception and representation expenses ($35,000). Note that headquarters support is supplemented by support funds budged by the : Energy Information Administration, Economic Regulatory Administration, Hearings and Appeals, Civilian Radioactive Waste Management, and the Emergency Preparedness appropriation. Decrease reflects a $1.5M reduction for resource information management efficiencies. Decrease partially offset by increase

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III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Human Resources and Administration (Cont'd)		for rent and DCAA audit backlog.	for DCAA & DLA to reduce audit backlog by the end of FY 1997.
	$ 122,172	$ 120,790	$ 119,880
Congressional and Intergovernmental Affairs	Funding for employee training and development.	Funding for employee training and development.	Funding for employee training and development.
	$ 5	$ 5	$ 5
Public and Consumer Affairs	Funding for employee training and development.	Funding for employee training and development.	Funding for employee training and development.
	$ 4	$ 4	$ 4
General Counsel	Funding for DOE law library acquisitions and maintenance, patent attorneys to process patent waivers, licenses and clearances; consulting services to receive, process and track 5000 inventions and patent documents; transcription services required for legal support of litigation; and employee training and development.	Funding for DOE law library acquisitions and maintenance, patent attorneys to process patent waivers, licenses and clearances; consulting services to receive, process and track 5000 inventions and patent documents; transcription services required for legal support of litigation; and employee training and development. This level reflects administrative savings in accordance with the President's initiative.	Funding for DOE law library acquisitions and maintenance, patent attorneys to process patent waivers, licenses and clearances; consulting services to receive, process and track 5000 inventions and patent documents; transcription services required for legal support of litigation; and employee training and development.
	$ 1,622	$ 1,665	$ 1,662

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III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Economic Impact and Diversity	Funding for special emphasis programs, investigations associated with processing civil rights complaints, services related to small and disadvantaged business activities/conferences, and employee training.	Funding for special emphasis programs, investigations associated with processing civil rights complaints, and services related to small disadvantaged business activities/conferences, and employee training. This level reflects administrative savings and support service reductions.	Funding for special emphasis programs, investigations associated with processing civil rights complaints, services related to small and disadvantaged business activities/conferences, and employee training. Increase to maintain FY 1994 operating level, offset by use of unobligated balances in program support; thus maintaining compliance with the President's administrative savings initiative.
	$ 265	$ 227	$ 265
Board of Contract Appeals	Funding for employee training and development.	Funding for employee training and development.	Funding for employee training and development.
	$ 1	$ 1	$ 1
Field Management	Funding for support in the areas of: independent cost estimates, development of project control systems, technical support in contract negotiation between the Department and public utilities, analysis of project and research and development efforts, project reviews, and contractor employee protection investigative services. Also funds system development, enhancement, ADP hardware acquisition and maintenance, timesharing services, and employee training and development.	Funding for support in the areas of: independent cost estimates, development of project control systems, technical support in contract negotiation between the Department and public utilities, analysis of project and research and development efforts, project reviews, and contractor employee protection investigative services. Also funds system development, enhancement, ADP hardware acquisition and maintenance, timesharing services, and employee training and development. Increase for planning and field oversight functions.	Funding for support in the areas of: independent cost estimates, development of project control systems, technical support in contract negotiation between the Department and public utilities, analysis of project and research and development efforts, project reviews, and contractor employee protection investigative services. Also funds system development, enhancement, ADP hardware acquisition and maintenance, timesharing services, and employee training and development. Increase for development of a Facilities Information Management System (FIMS) which will inventory real property in the DOE complex, and a Records Management System to house contractor employee case files, infrastructure acquisition, and freedom of information requests (human experimentation).

III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Field Management (Cont'd)	$ 6,750	$ 7,381	$ 7,636
Chicago Operations Office	Funding provides for centralized support services to the Chicago Operations Office (CH). Support services include: rent (ANL) and utilities to the Argonne National Lab (ANL)-(collocated) and a portion of three other DOE-owned facilities which house Federal employees, telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, and other administrative support to the various CH matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the four locations are funded here. Landlord funding is not budgeted for CH.	Funding provides for centralized support services to the Chicago Operations Office (CH). Support services include: rent (ANL) and utilities to the Argonne National Lab (ANL)-(co-located), and a portion of three other DOE-owned facilities which house Federal employees, telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, and other administrative support to the various CH matrix organizations. Program funded employees training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the four locations are funded here. Landlord funding is not budgeted for CH. This level reflects administrative savings from FY 1993 level in accordance with the President's initiative.	Funding provides for centralized support services to the Chicago Operations Office (CH). Support services include: rent (ANL) and utilities to the Argonne National Lab (ANL)-(co-located) and a portion of three other DOE-owned facilities which house Federal employees, telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, and other administrative support to the various CH matrix organization. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the four locations are funded here. Landlord funding is not budgeted for CH. Decrease in support services offset by travel increase to ensure oversight of DOE facilities. Decrease also reflects administrative savings and support service reductions.
	$ 8,005	$ 8,202	$ 7,704

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III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho Operations Office	Funding provides for centralized support services to the Idaho Operations Office (ID). Support services include: rent (other) and utilities for the two buildings in Idaho Falls which house employees funded in this appropriation, as well as the following support for all Federal employees (to include program FTEs housed at various locations in INEL): telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes funding provided to the M&O for support services activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various ID matrix organizations. Program funded employees' technical training, program specific system development, and other program specific items are funded by the respective programs. Landlord funding is included in Environmental Restoration and Waste Management.	Funding provides for centralized support services to the Idaho Operations Office (ID). Support services include: rent (other) and utilities for the two buildings in Idaho Falls which house employees funded in this appropriation, as well as the following support for all Federal employees (to include program FTEs housed at various locations in INEL): telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes funding provided to the M&O for support services activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various ID matrix organizations. Program funded employees' technical training, program specific system development, and other program specific items are funded by the respective programs. Landlord funding is included in Environmental Restoration and Waste Management.	Funding provides for centralized support services to the Idaho Operations Office (ID). Support services include: rent (other) and utilities for the two buildings in Idaho Falls which house employees funded in this appropriation, as well as the following support for all Federal employees (to include program FTEs house at various locations in INEL): telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes funding provided to the M&O for support services activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various ID matrix organizations. Program funded employees' technical training, program specific system development, and other program specific items are funded by the respective programs. Landlord funding is included in Environmental Restoration and Waste Management. Decrease reflects administrative savings and support services reductions.
	$ 13,300	$ 13,034	$ 12,828

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III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge Operations Office	Funding provides for centralized support services to the Oak Ridge Operations Office (ORO). Support services include: rent (GSA) and utilities for the Federal Building and a portion of two other DOE-owned facilities which house Federal employees, telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various ORO matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the Federal building are funded here. Landlord funding is included in the Nuclear Energy budget. Includes funding for GSA facility fund.	Funding provides for centralized support services to the Oak Ridge Operations Office (ORO). Support services include: rent (GSA) and utilities for the Federal Building and a portion of three other DOE-owned facilities which house Federal employees, telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies, and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various ORO matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the Federal building are funded here. Landlord funding is included in the Nuclear Energy budget. Increase of $1.5M for centralization of administrative support costs for all Federal FTEs located at ORNL, partially offset by decrease due to rent reduction for GSA facility fund and GSA delegation (-.3M).	Funding provides for centralized support services to the Oak Ridge Operations Office (ORO). Support services include: rent (GSA) and utilities for the Federal Building and a portion of three other DOE-owned facilities which house Federal employees, telecommunications, postage, printing and reproduction, building operations, logistical services, automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various ORO matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the Federal building are funded here. Landlord funding is included in the Nuclear Energy budget. Decrease reflects administrative savings and support service reductions.
	$ 9,548	$ 10,729	$ 10,563

III. Support Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office	Funding provides for centralized support services to the Oakland Operations Office (OAK). Support services include: rent (GSA) and utilities for the Federal Building, telecommunications, postage, printing and reproduction, building operations, logistical services; automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various OAK matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the Federal building are funded here as well as support costs for employees housed in the Lawrence Berkeley Laboratory which are funded in this appropriation. Landlord funding is not budgeted for OAK.	Funding provides for centralized support services to the Oakland Operations Office (OAK). Support services include: rent (GSA) and utilities for the Federal Building, telecommunications, postage, printing and reproduction, building operations, logistical services; automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various OAK matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the Federal building are funded here as well as support costs for employees housed in the Lawrence Berkeley Laboratory which are funded in this appropriation. Landlord funding is not budgeted for OAK. Increase for rent increase associated with a move to a new Federal building.	Funding provides for centralized support services to the Oakland Operations Office (OAK). Support services include: rent (GSA) and utilities for the Federal Building, telecommunications, postage, printing and reproduction, building operations, logistical services; automated data processing development and acquisition, employee development and training, total quality management, health services, permanent change of station (PCS) shipment and storage of household goods and relocation contractor services, supplies and furniture, and vehicle and office equipment maintenance. Includes support service contracts for mail/file activities, word processing, ADP/telecommunications, photographic services, facilities management support (records holding/material handling), and other administrative support to the various OAK matrix organizations. Program funded employee training and ADP acquisition are funded by the respective programs; all other support services to program employees housed in the Federal building are funded here as well as support costs for employees housed in the Lawrence Berkeley Laboratory which are funded in this appropriation. Landlord funding is not budgeted for OAK. Funding reflects FY 1993 level adjusted for the President's administrative savings initiative.
	$ 7,237	$ 7,881	$ 7,997
Support Services	$ 177,000	$ 178,330	$ 176,507

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Program Support

II. A. Summary Table: Program Support

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Policy, Analysis, and Systems Studies	$ 4,334	$ 4,500	$ 5,864	+ 30
Environmental Policy Studies	0	6,070	8,000	+ 32
International Policy Studies	1,255	0	0	0
Public Affairs	55	54	92	+ 70
Consumer Affairs	47	46	46	0
Minority Economic Impact	3,626	3,426	3,415	0
Scientific and Technical Training	0	2,285	2,248	- 2
Total, Program Support	$ 9,317	$ 16,381	$ 19,665	+ 20

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Support			
Policy, Analysis, and Systems Studies	Provides for studies and analyses of energy issues which effect national energy supply and demand prices. These studies are used in the development of the Department's national energy policy, and Departmental strategic planning. Examples of policy issues studied are: energy efficiency and demand, oil and gas, electricity supply (including coal, nuclear and renewable), and emerging technologies. Also, funds support the overall departmental program evaluation and performance measurement program. Additionally, funding is used in support of in-house analyses such as off-the-shelf studies, security support relative to classified documents and State Department international cables, and correspondence systems. Representative policy studies which were completed in FY 1994 follow: o Incremental Cost of electric Transmission Service - this project helped the Department assess the strengths and weaknesses of methods the electric industry and its regulators use to calculate the incremental cost of electric transmission service. O Analyses of the Feasibility of Replacing Gasoline with Alternative Transportation Fuels - this study provided information to be used to determine whether the use of alternative fuels in non-road vehicles and engines could contribute significantly to reduced reliance on imported energy sources. This is also a requirement of the Energy Policy Act (EPACT), Section 412(a).	Provides for studies and analyses of energy issues (domestic and international) which effect national energy supply and demand prices. These studies are used in the development of the Department's national energy policy, and Departmental strategic planning. Examples of policy issues studied are: national defense, energy efficiency and demand, oil and gas, electricity supply (including coal, nuclear and renewable), and emerging technologies. Also, funds support the overall departmental program evaluation and performance measurement program. Additionally, funding is used in support of in-house analyses such as off-the-shelf studies, security support relative to classified documents, and State Department international cables, and correspondence systems. Representative policy studies planned for FY 1995 follow: o National Association of Regulatory Utility Commissioners (NARC) electricity Committee (Electricity Restructuring) - facilitate the Department's stakeholder interactions on key issues related to restructuring of the electric utility industry. o Support of Economic Externatity analyses for the Domestic Natural Gas Oil Initiative (DNGOI) Action 10.1 Study the Costs and Benefits of Oil Imports - this study will assess the near- and long-term economic, environmental and security implications of rising U.S. dependence on oil imports. o Least Cost Energy Strategy - fulfill	Provides for studies and analyses of energy issues (domestic and international) which effect national energy supply and demand prices. These studies are used in the development of the Department's national energy policy, and Departmental strategic planning. Examples of policy issues studied are: national defense, energy efficiency and demand, oil and gas, electricity supply (including coal, nuclear and renewable), and emerging technologies. Also, funds support the overall departmental program evaluation and performance measurement program. Additionally, funding is used in support of in-house analyses such as off-the-shelf studies, security support relative to classified documents, State Department international cables, and correspondence systems. Representative policy studies anticipated in FY 1996 follow: o Energy Efficiency and Alternative Transportation Fuels - assess the effectiveness and impacts of the energy demand and alternative fuel related provisions of EPACT, and assess options for enhancing the net benefits of these provisions. o Oil Policy - continue analysis of incentives for domestic oil and gas production and impact of tax policy on the oil and gas industry. o Natural Gas Policy - continue to develop policies to remove impediments to natural gas consumption so that natural gas could realize its potential in achieving environmental, energy security and economic goals stated in

III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Policy, Analysis, and Systems Studies (Cont'd)	o Grant to National Association of Regulatory utility Commissions (NARUC) - these funds were used to aid the State Commissions in development their position on issues related to the requirements of the EPACT. o Employment Impacts of Energy Policies - historical state-specific, industry-specific output data from Commerce was used to develop relationships between national output variability and output variability at the sub-national level. Also, the initial translation from output to employment using Bureau of Labor Statistics data on employment/output ratios for the 31 industry groups was utilized. The marriage of these two data sources will result in a tool to provide desegregated estimates of the employment impact of energy-policy related to industry output changes. o Technical Support for Strategic Planning - funds provided assistance to the Policy Office and other offices in the Department in the development of the Department's Strategic Plan and planning activities at all levels of the Department. It also was instrumental in structuring methods to match the Department's priorities with its FY 1996 budget request. o Science and Technology Policy Analysis - this supported the Administration's science and technology policy initiatives, Departmental endeavors in support of the National science and Technology Council (NSTC), the Office of Science and Technology Policy (OSTP), and in particular, DOE's strategic plans for industrial competitiveness and research partnerships.	EPACT requirements by developing a more in-depth explanation of what the strategy does, to the reasonable satisfaction of Congress. o Energy Subsidies Study (Section 3015) - pursue an analysis of the market dynamics that are expected to occur between 1995 and 2010 to achieve the results of the Section 502(b) analysis - a technical and economic analysis of meeting the alternative fuels displacement goals of EPACT. o Assessment of International Agreements Review Process - improve the DOE international agreements process to facilitate agreements that further DOE and U.S. policy objectives; decrease time and effort in processing agreements, and improve communication among DOE offices and between DOE and outside agencies regarding these agreements. o China Institutional Study - assess the Energy Institutions of the Chinese Central Government to provide a description of the various institutions, and their ranking in the political hierarchy of the Chinese government. o Summit of The Americas - provide support for the USG preparations for the Summit of Americas, to be hosted by the President in December 1994, and to support implementation of the initiatives arising from the Summit. The Energy Initiative supports sustainable development, export of renewable energy and energy efficiency technologies, as well as helping to meet U.S. and Latin American commitments to the Framework Convention on Climate Change.	the Energy Policy Act, and the Domestic Natural Gas and Oil Initiative. o Electricity and Generation Policy - projects include efficient pricing for wholesale transmission services, unbundling utility services, retail competition issues, power pooling issues, impact of increasing competition on utility planning, and alternative approaches for incorporating energy efficiency and fuel diversification goals in a more competitive environment. o Hydroelectric Regulation - coordinate with Interior and the Corps of Engineers on a multi-year study of opportunities for increased hydroelectric generation at existing Federally-owned water facilities. Complies with section 2404 of the Energy Policy Act and the President's Climate Change Action Plan. o Science and Technology - implement a DOE-wide strategic and policy framework for defining and assessing DOE's science and technology portfolio; develop a plan and provide support for implementing science and technology components of the National Energy Plan. o Strategic Planning - manage the Department's overall planning process, including coordination, training, and educational support; analysis and evaluation of programmatic strategic, multi-program, and institution plans. o Economic Analysis - evaluate economic instruments likely to be considered in future energy and environmental policy plans. Calculate job and other economic impacts of energy-related policies and programs to

III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Policy, Analysis, and Systems Studies (Cont'd)	o National Energy Policy Plan (NEPP) Public Hearings - supported eight public forums that occurred between June and September of 1994 to provide input to the Congressionally mandated biennial National Energy Policy Plan. o Support for Energy and Environmental Model Projections - provides model simulations that support the NEPP and the National Action Plan. This project encompasses performing modeling simulations, modifying the model structure, implementing new algorithms, updating data inputs, calibrating the model, and providing independent analytic products that support these products.	o Science and Technology (S&T) Policy and Issues Analysis - technical support to identify emerging national S&T requirements and priorities from customers and stakeholders, such as Congress, industry, universities, and state, local and tribal governments. o Fissile Materials Policy Development - technical support to develop a policy, summary of issues and options related to fissile materials, both domestic and foreign, a literature review of the subject area and an assessment based on existing information of countries of origin of specific fissile material. Increase includes support to new policy analyses in the areas of national defense, and science and technology. Also, reflects new emphasis on program evaluation, and implementation of performance standards approach to strategic planning and budgeting.	support government Performance and Results Act requirements for program measurement and evaluation. o International Energy Policy - continue analytical support for the energy initiatives of the Gore-Chernomyrdin Commissions and expand these efforts to encompass other countries of the former Soviet Union. o National Security policy - studies and analyses on issues compromising Departmental national security functions including issues associated with management of surplus fissile materials no longer needed for national security; and support for international nuclear reactor safety initiatives. Increase will support an expanded role in reviewing Departmental policies regarding national security, strategic planning, DOE program evaluation, and international affairs including export and trade promotion.
	$ 4,334	$ 4,500	$ 5,864
Environmental Policy Studies	Funded in Energy Supply R&D.	Provides for the study and analysis of environmental resources and issues (domestic and international) which effect national energy supply and demand prices. These studies are used in the development of the Department's energy policies and U.S. energy systems. Examples of issued studied are: environmental policy impacts on energy supply, demand, and prices; global climate change; transboundary air and water pollution and waste disposal; air quality; water; waste; natural resource legislative and	Provides for the study and analysis of environmental resources and issues (domestic and international) which effect national energy supply and demand prices. These studies are used in the development of the Department's energy policies and U.S. energy systems. Examples of issues studied are: environmental policy impacts on energy supply, demand, and prices; global climate change; transboundary air and water pollution and waste disposal; air quality; water; waste; natural resource legislative and

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Policy Studies (Cont'd)		regulatory proposals; and international energy-environmental technology cooperation. Environmental Policy Studies which will be started or continued in FY 1995 follow: o Support Services for Energy and Environmental Model Projections - provide the Policy Office with long-term modeling and analytic support. In doing so, it will provide support for the National Energy Policy Plan, the Post-2000 analysis efforts for the Climate Change Action Plan, and the 1995 biennial review of the Climate Action Plan. o Monitoring utility Climate Challenge - provide information that is required to monitor the Climate Challenge program. It will provide a basis for determining succes for the program and provide a mechanism to rank accomplishments under the program. o Energy Modeling Forum - this "subscription" will allow the Department to gain knowledge and insight from discussions with other energy modelers about energy relationships and interactions with the economy, and help set the agenda for studies that the forum undertakes. o Utility Sector Competition and the Environment - project to determine how changes in the competitive structure of utility markets will effect the efficacy of existing DOE policies and create opportunities for new initiatives to meet our energy, economic, and environmental goals and policy options. o Technical Evaluation of Air Quality-Related Proposals - project to	regulatory proposals; and international energy-environmental technology cooperation. Environmental Policy Studies which will be started or continued follow: o Global Climate Change - comprehensive analysis of potential responses for green house gas emission reduction will be carried out using improved quantitative analysis methodologies. o Technology Assessment - develop and maintain an up-to-date information base on technology characterization and other factors influencing market acceptance for U.S. and other world regions. o Domestic Environmental Issues Analysis - conduct regional environmental assessments for emerging energy/environmental issues; update data and improve economic data base on environmental control technology costs and regulatory compliance costs. o Transboundary Issues - conduct U.S. energy studies for U.S./Canada air quality accord. Conduct energy industry impacts study for air along U.S./Mexico border. o Energy End-Use Environmental Studies - continue to assist Environmental Protection Agency and other agencies to implement their environmental responsibilities in a manner that minimizes the potential adverse effects of such policies on the economy or individual consumers. Increased funding in FY 1996 will allow the Department to address the impacts of environmental laws and regulations,

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Environmental Policy Studies (Cont'd)		provide for technical support for the Policy Office participation in the National Acid Precipitation Assessment Program (NAPAP). o Evaluation of Mobile Source Environmental Regulations - task to provide the capability and resources to prepare timely comments and responses on rulings by EPA, DOT, and the individual states acting alone or, as the Ozone Transport Commission (OTC), in concert with one another.	issues associated with the environment restoration and waste management program of the Department, technology transfer issues and anaylses, and defense related environmental issues. Also, funds will permit the Department to be actively involved in international environmental programs. This funding level is comparable to the FY 1994 operating level of $7.545 plus 6%. Historically, environmental programs analyses have been funded at $10M. However, this level included funding of the Mexico City air quality program.
	$ 0	$ 6,070	$ 8,000
International Policy Studies	Provides for studies and analyses of international energy issues including analyses of energy market supply and demand prices. These studies are used in the development of the Department's national energy policy, and Departmental strategic planning. Also, funds are included for security support relative to classified documents and State Department international cables. Representative policy studies which were completed in FY 1994 follow: o Support for DOE-Common Wealth of Independent States (CIS) Cooperative Activities - provided contractor assistance for technology assessments, project reviews, and administrative services in support of the Policy Office interaction with various CIS entitites. o Review of International Agreements - project supported the Policy Office's	Merged with Policy Analysis and Systems Studies	Merged with Policy Analysis and Systems Studies

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
International Policy Studies (Cont'd)	mission and was directly responsive to prior studies that recommended the development of evaluation procedures to be consistently applied to all Science and Technology Agreements and Cooperative Research and Development Agreements. o China Studies - this project focused on major opportunity for U.S. Government and industries partnership to improve their competition for China's expanding electric pwoer market by dealing with electric power goods and services offered by U.S. firms. o Export Assistance - supported DOE's Eastern European Energy Strategy and helped advance economic and energy reform in the regions. o North American Free Trade Agreement (NAFTA) - follow up support was provided to NAFTA and the goals of the Energy Policy and Conservation Act (EPCA) and Sectin 3020(e) of the Energy Policy Act, calling for greater cooperation in energy in Latin America.		
	$ 1,255	$ 0	$ 0

III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Public Affairs	Funding for delivery of DOE news releases to media bureaus; radio and television broadcasts; electronic news wire and clipping services from major media markets; newspaper delivery; videotape duplication; transcription services for media events, and consulting services aimed at quality improvement of information distributed to the public.	Funding for delivery of DOE news releases to media bureaus; radio and television broadcasts; electronic news wire and clipping services from major media markets; newspaper delivery; videotape duplication; transcription services for media events, and consulting services aimed at quality improvement of information distributed to the public.	Funding for delivery of DOE news releases to media bureaus; radio and television broadcasts; electronic news wire and clipping services from major media markets; newspaper delivery; videotape duplication; transcription services for media events, and consulting services aimed at quality improvement of information distributed to the public. Increase to maintain FY 1994 operating level which allows for expanded media and public awareness activities driven by the DOE change in focus and commitment to openness.
	$ 55	$ 54	$ 92
Consumer Affairs	Funding for public service announcements and bimonthly distribution to 300 radio stations nationwide; DOE consumer and public liaison radio programs (approximately twelve five minute programs) and reproduction and distribution to 103 radio stations; and the Consumer Resource Handbook printing and distribution costs.	Funding for public service announcements and bimonthly distribution to 300 radio stations nationwide; DOE consumer and public liaison radio programs (approximately twelve five minute programs) and reproduction and distribution to 103 radio stations; and the Consumer Resource Handbook printing and distribution costs.	Funding for public service announcements and bimonthly distribution to 300 radio stations nationwide; DOE consumer and public liaison radio programs (approximately twelve five minute programs) and reproduction and distribution to 103 radio stations; and the Consumer Resource Handbook printing and distribution costs.
	$ 47	$ 46	$ 46
Minority Economic Impact	Funding for development of programs addressing impacts of energy policies, programs, regulations, legislation, and other Departmental actions on minorities, minority educational institutions, minority businesses, and minority communities. Major activities are:	Funding for development of programs addressing impacts of energy policies, programs, regulations, legislation, and other Departmental actions on minorities, minority educational institutions, minority businesses, and minority communities. Major activities are:	Funding for development of programs addressing impacts of energy policies, programs, regulations, legislation, and other Departmental actions on minorities, minority educational institutions, minority businesses, and minority communities. Major activities are:
	Minority Educational/Institutional Support	Minority Educational/Institutional Support	Minority Educational/Institutional Support

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Minority Economic Impact (Cont'd)	-Supports minority education institutions by providing student stipends for science and technology disciplines, and technical assistance to institution faculty.	-Supports minority education institutions by providing student stipends for science and technology disciplines, and technical assistance to institution faculty.	-Supports minority education institutions by providing student stipends for science and technology disciplines, and technical assistance to institution faculty.
	Minority Business and Community Development	Minority Business and Community Development	Minority Business and Community Development
	-Funds technical assistance for minority businesses by providing nationwide assistance workshops in areas such as technology transfer, National Energy Strategy initiatives, and environmental and waste management. These workshops and other outreach assistance activities serve as an incentive for minority businesses to participate in energy activities.	-Funds technical assistance for minority businesses by providing nationwide assistance workshops in areas such as technology transfer, National Energy Strategy initiatives, and environmental and waste management. These workshops and other outreach assistance activities serve as an incentive for minority businesses to participate in energy activities.	-Funds technical assistance for minority businesses by providing nationwide assistance workshops in areas such as technology transfer, National Energy Strategy initiatives, and environmental and waste management. These workshops and other outreach assistance activities serve as an incentive for minority businesses to participate in energy activities.
	Minority Energy Information Clearinghouse	Minority Energy Information Clearinghouse	Minority Energy Information Clearinghouse
	-Funds the enhancement and maintenance of a database of energy programs available to minority educational institutions, businesses, and contractors.	-Funds the enhancement and maintenance of a database of energy programs available to minority educational institutions, businesses, and contractors.	-Funds the enhancement and maintenance of a database of energy programs available to minority educational institutions, businesses, and contractors.
	Data Development and Minority Energy Assessment	Data Development and Minority Energy Assessment	Data Development and Minority Energy Assessment
	-Funds the enhancement and maintenance of the Socioeconomic Energy Research and Analysis Program (SERAP) database. This database assesses the impact of energy policy on energy consumption patterns. The database is kept current with Census data which is combined with energy information, e.g., household energy consumption expenditures, to assess energy impacts on minorities.	-Funds the enhancement and maintenance of the Socioeconomic Energy Research and Analysis Program (SERAP) database. This database assesses the impact of energy policy on energy consumption patterns. The database is kept current with Census data which is combined with energy information, e.g., household energy consumption expenditures, to assess energy impacts on minorities.	-Funds the enhancement and maintenance of the Socioeconomic Energy Research and Analysis Program (SERAP) database. This database assesses the impact of energy policy on energy consumption patterns. The database is kept current with Census data which is combined with energy information, e.g., household energy consumption expenditures, to assess energy impacts on minorities.

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Minority Economic Impact (Cont'd)	Policy Assessments and Analyses -Funds case studies and specific analyses such as: economic impacts of utility costs, impacts of legislation on various population groups, use of high energy efficiency technologies on community development.	Policy Assessments and Analyses -Funds case studies and specific analyses such as: economic impacts of utility costs, impacts of legislation on various population groups, use of high energy efficiency technologies on community development.	Policy Assessments and Analyses -Funds case studies and specific analyses such as: economic impacts of utility costs, impacts of legislation on various population groups, use of high energy efficiency technologies on community development.
	Financial Assistance -Funds used to reimburse financial institutions for their program support costs associated with administering funds (low interest loans) to minority entrepreneurs. Funds administered are obtained from the DOE Petroleum Violation Escrow account.	Financial Assistance -Funds used to reimburse financial institutions for their program support costs associated with administering funds (low interest loans) to minority entrepreneurs. Funds administered are obtained from the DOE Petroleum Violation Escrow account. Decrease reflects administrative savings as well as support service reductions.	Financial Assistance -Funds used to reimburse financial institutions for their program support costs associated with administering funds (low interest loans) to minority entrepreneurs. Funds administered are obtained from the DOE Petroleum Violation Escrow account. Net funding level offsets the travel and support services increase which places the office in compliance with the President's administrative savings initiative.
	$ 3,626	$ 3,426	$ 3,415
Scientific and Technical Training	Funded in Energy Supply and R&D.	Funding for DOE-wide technical curriculum development, training standards and guidelines, and advanced learning technologies such as automated course catalogs, video, and computer training. Includes funding for the Energy Technical Training Center (ETTC) facility funding with a planned training package in future years.	Funding for DOE-wide technical curriculum development, training standards and guidelines, and advanced learning technologies such as automated course catalogs, video, and computer training. Includes funding for the Energy Technical Training Center (ETTC) facility funding with a planned training package in future years. Decrease reflects administrative savings initiative and support service reductions.

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Scientific and Technical Training (Cont'd)	$ 0	$ 2,285	$ 2,248
Program Support	$ 9,317	$ 16,381	$ 19,665

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Capital Equipment

II. A. Summary Table: Capital Equipment

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Chief Financial Officer	396	352	362	+ 3
Human Resources and Administration	6,323	5,341	5,496	+ 3
Field Management	20	30	31	+ 3
Chicago Operations Office	182	205	211	+ 3
Idaho Operations Office	309	348	358	+ 3
Oak Ridge Operations Office	456	514	529	+ 3
Oakland Operations Office	94	105	108	+ 3
Total, Capital Equipment	$ 7,780	$ 6,895	$ 7,095	+ 3

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment			
Chief Financial Officer	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: LAN servers, network monitoring equipment, printers, and personal computers. In addition, funding supports the DOE Hewlett Packard (HP) computer platforms (processes the department's financial data) main memory upgrades, operating system software, and storage disk drives. The HP production processor and test processor continue to experience increasing demands for processing financial and accounting information such as: integration of FIS to DISCAS, new requirements for FIS and Standard General Ledger, improved payroll and travel accounting initiatives, user demand, and high speed printers to accommodate increased system reporting workload. Funding for linkage of field sites to the HP are included in field budgets.	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: LAN servers, network monitoring equipment, printers, and personal computers. In addition, funding supports the DOE Hewlett Packard (HP) computer platforms (processes the department's financial data) main memory upgrades, operating system software, and storage disk drives. The HP production processor and test processor continue to experience increasing demands for processing financial and accounting information such as: integration of FIS to DISCAS, new requirements for FIS and Standard General Ledger, improved payroll and travel accounting initiatives, user demand, and high speed printers to accommodate increased system reporting workload. Funding for linkage of field sites to the HP are included in field budgets.	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: LAN servers, network monitoring equipment, printers, and personal computers. In addition, funding supports the DOE Hewlett Packard (HP) computer platforms (processes the department's financial data) main memory upgrades, operating system software, and storage disk drives. The HP production processor and test processor continue to experience increasing demands for processing financial and accounting information such as: integration of FIS to DISCAS, new requirements for FIS and Standard General Ledger, improved payroll and travel accounting initiatives, user demand, and high speed printers to accommodate increased system reporting workload. Funding for linkage of field sites to the HP are included in field budgets.
	$ 396	$ 352	$ 362

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III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Human Resources and Administration	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes xerox machines, LAN servers, network monitoring equipment, printers, personal computers, building maintenance equipment, tools, and transportation equipment. This funding also supports programs funded in this appropriation (except Chief Financial Officer, field Management, and the Operations Offices). In addition, funding supports three DOE-wide mainframe computing systems and ancillary equipment: -Management Information System - supports approximately 240 application systems, e.g. procurement, personnel, and security. -Automated Office Support System - supports 30 application systems, e.g., office automation, and special applications for foreign travel and Field Management. -Classified Computer System - partial funding for classified office automation and management information systems. DOE has a $490 million facility and capital equipment asset base in the Washington area. Items funded include: uninterruptable power systems, facility equipment repair or replacement, and computer upgrades.	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes xerox machines, LAN servers, network monitoring equipment, printers, personal computers, building maintenance equipment, tools, and transportation equipment. This funding also supports programs funded in this appropriation (except Chief Financial Officer, Field Management, and the Operations Offices). In addition, funding supports three DOE-wide mainframe computing systems and ancillary equipment: -Management Information System - supports approximately 200 application systems, e.g. procurement, personnel, and security. -Automated Office Support System - supports 30 application systems, e.g., office automation, and special applications for foreign travel and Field Management. -Classified Computer System - partial funding for classified office automation and management information systems. DOE has a $490 million facility and capital equipment asset base in the Washington area. Items funded include: uninterruptable power systems, facility equipment repair or replacement, and computer upgrades. Decrease reflects a shift from the Management Information System (MIS) upgrade to more cost effective use of local area networks and migrating applications from the MIS to platforms.	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes xerox machines, LAN servers, network monitoring equipment, printers, personal computers, building maintenance equipment, tools, and transportation equipment. This funding also supports programs funded in this appropriation (except Chief Financial Officer, Field Management, and the Operations Offices). In addition, funding supports three DOE-wide mainframe computing systems and ancillary equipment: -Management Information System - supports approximately 200 application systems, e.g. procurement, personnel, and security. -Automated Office Support System - supports 30 application systems, e.g., office automation, and special applications for foreign travel and Field Management. -Classified Computer System - partial funding for classified office automation and management information systems. DOE has a $490 million facility and capital equipment asset base in the Washington area. Items funded include: uninterruptable power systems, facility equipment repair or replacement, and computer upgrades.

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III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Human Resources and Administration (Cont'd)	$ 6,323	$ 5,341	$ 5,496
Field Management	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: LAN servers, network monitoring equipment, printers, and personal computers. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: LAN servers, network monitoring equipment, printers, and personal computers. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: LAN servers, network monitoring equipment, printers, and personal computers. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.
	$ 20	$ 30	$ 31
Chicago Operations Office	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles,and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles,and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles,and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.
	$ 182	$ 205	$ 211

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho Operations Office	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.
	$ 309	$ 348	$ 358
Oak Ridge Operations Office	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.
	$ 456	$ 514	$ 529

III. Capital Equipment (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.	Funding for the acquisition, replacement, or upgrade of office, automotive, and ADP/telecommunications equipment which meets capitalization criteria (has a period of service of two years or more and the cost exceeds $5,000). This includes: xerox machines, LAN servers, network monitoring equipment, printers, personal computers, central processing units, building maintenance equipment, tools, motor vehicles, and transportation equipment. Funding is primarily used to enhance process efficiencies or when existing equipment becomes unserviceable or when further repairs would be uneconomical.
	$ 94	$ 105	$ 108
Capital Equipment	$ 7,780	$ 6,895	$ 7,095

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KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Cost of Work for Others

The Cost of Work for Others program provides funding to the Department of Energy's (DOE) multi-purpose field offices and national laboratories to finance the cost of products and services requested by non-DOE users, both foreign and domestic. The products and services provided by the Department under this program generally are not available from alternate sources and 1) result from a budgeted mission of the Department or 2) are reimbursable work for non-federal entities where the sponsor is precluded from providing advance funding. The costs of the Cost of Work for Others program are offset by revenues received from the sale of products and services to our customers.

II. A. Summary Table: Cost of Work for Others

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Products Sold, Operating				
Idaho	$ 72	$ 0	$ 0	0
Oakland	6,300	0	0	0
Savannah River	3,167	3,500	3,000	- 14
Subtotal, Products Sold, Operating	$ 9,539	$ 3,500	$ 3,000	- 14
Services Performed, Operating				
Albuquerque	$ 2,010	$ 1,700	$ 2,000	+ 18
Argonne	100	50	265	+430
Brookhaven	53	0	1,150	>999
Chicago	650	100	150	+ 50
Idaho	606	1,255	281	- 78
Lawrence Berkeley	5,507	3,846	1,619	- 58
Lawrence Livermore	1,568	514	3,912	+661
Oak Ridge	812	4,049	2,906	- 28
Oak Ridge National Lab	864	2,185	1,411	- 35
Office of Scientific and Technical Info	617	1,000	1,000	0
Richland	300	32	532	>999
Oakland	4,000	4,025	2,500	- 38
National Renewable Energy Laboratory	0	100	100	0
Cooperative R&D Agreements	5,000	2,000	2,000	0
Texas Contribution to the SSC	30,000	0	0	0
Subtotal, Services Performed, Operating	$ 52,087	$ 20,856	$ 19,826	- 5
Total, Cost of Work for Others	$ 61,626	$ 24,356	$ 22,826	- 6

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Cost of Work for Others			
Products Sold, Operating			
Idaho	As a by-product of a geothermal well, natural gas is sold to private firms at the Idaho National Engineering Laboratory (INEL). Estimate includes costs for production, storage and sales.	Project at the Geothermal well has been discontinued. Natural gas is no longer collected. No funding requested.	Project at the Geothermal well has been discontinued. Natural gas is no longer collected. No funding requested.
	$ 72	$ 0	$ 0
Oakland	As a by-product of steam generator testing at the Energy Technology Engineering Center (ETEC), steam is sold to Southern California Edison Co. This level of funding is based on the estimated capacity of the particular generator that is being tested for the given fiscal year.	The Sodium Component Test Installation (SCTI) at ETEC will be shut down in FY 1995. Therefore, no funding is requested.	The Sodium Component Test Installation (SCTI) at ETEC will be shut down in FY 1995. Therefore, no funding is requested.
	$ 6,300	$ 0	$ 0
Savannah River	Costs associated with forest management and the sale of timber with the U.S. Forest Service. Increase associated with support for wildland fire protection program.	Costs associated with forest management and the sale of timber with the U.S. Forest Service. Increase related to larger areas subject to timber operations and reforestation.	Costs associated with forest management and the sale of timber with the U.S. Forest Service. Decrease related to timber operations.
	$ 3,167	$ 3,500	$ 3,000
Subtotal, Products Sold, Operating	$ 9,539	$ 3,500	$ 3,000

III. Cost of Work for Others (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Services Performed, Operating			
Albuquerque	Miscellaneous services for state and local governments such as, highly specialized computer and automation support at the Sandia and Los Alamos National Laboratories and the sale of utilities (water) to the County of Los Alamos at Los Alamos National Laboratory.	Miscellaneous services for state and local governments such as, highly specialized computer and automation support at the Sandia and Los Alamos National Laboratories and sale of utilities (water) to the County of Los Alamos at Los Alamos National Laboratory. Decrease reflects forecast of utility sales by project office.	Miscellaneous services for state and local governments such as, highly specialized computer and automation support at the Sandia and Los Alamos National Laboratories and sale of utilities (water) to the County of Los Alamos at Los Alamos National Laboratory. Increase reflects current estimate for water sales.
	$ 2,010	$ 1,700	$ 2,000
Argonne	Work for state and local governments such as the Advanced Software Development and Comercialization project with the State of Illinois.	Work for state and local governments such as the Advanced Software Development and Comercialization project with the State of Illinois.	Work for state and local governments such as the Illinois Depart. of Energy & Natural Resources. Increase reflects reduction of uncosted balances which financed activity in FY 1995.
	$ 100	$ 50	$ 265
Brookhaven	Publication of Pergamon Press and miscellaneous activities for state and local government.	Publication of Pergamon Press and miscellaneous activities for state and local government. Program is reducing large uncosted balances from a previous period.	Publication of Pergamon Press and miscellaneous activities for state and local government. Increase reflects reduction of uncosted balances which financed activity in FY 1995.
	$ 53	$ 0	$ 1,150
Chicago	Reference materials at the New Brunswick Laboratory and use of the Sematech plasma etching center and other miscellaneous services at the Princeton Plasma Physics Laboratory (PPPL).	Reference materials at the New Brunswick Laboratory. Decrease due to Princeton Plasma Physics Laboratory's transfer of activity to Reimbursable Work for Others.	Reference materials at the New Brunswick Laboratory. Increase related to level of sales.
	$ 650	$ 100	$ 150

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III. Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho	Testing of Oak Ridge Associated Universities' (ORAU) Recoil Mass Spectrometer and irradiation services; and storage of Three Mile Island (TMI) abnormal waste (reactor filters).	Irradiation services; and storage of Three Mile Island (TMI) abnormal waste (reactor filters). Increase associated with expected Technology Transfer and Industrial Partnerships to begin in FY 1995.	Irradiation services; and storage of Three Mile Island (TMI) abnormal waste (reactor filters). Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds.
	$ 606	$ 1,255	$ 281
Lawrence Berkeley	Particle physics collaboration with Japan and work for state and local governments and non-profit organizations such as seismic monitoring techniques for the State Lands Commission; and various services for universities.	Work for state and local governments and non-profit organizations such as seismic monitoring techniques for the State Lands Commission; and various services for universities. Decrease due to reduced spending by state and local governments.	Work for state and local governments and non-profit organizations such as seismic monitoring techniques for the State Lands Commission; and various services for universities. Decrease due to completion of the NIH drosophila genome experiment.
	$ 5,507	$ 3,846	$ 1,619
Lawrence Livermore	Miscellaneous services performed for industry and foreign governments, state and local governments, and non-profit organizations such as the study of non-destructive evaluations applied to bridges and structural modal analysis for the State of California.	Miscellaneous services performed for state and local governments and non-profit organizations such as the study of non-destructive evaluations applied to bridges and structural modal analysis for the State of California. Decrease reflects the completed transfer of work for industry and foreign governments to Reimbursable Work for Others.	Miscellaneous services performed for state and local governments and non-profit organizations such as the study of non-destructive evaluations applied to bridges and structural modal analysis for the State of California. Increase related to expanded seismic work for Southern California Highway Admininistration.
	$ 1,568	$ 514	$ 3,912

III. Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge	Miscellaneous services for state and local governments and universities. Funding supplemented by the use of uncosted balances.	Miscellaneous services for state and local governments and universities. Increase reflects the need to maintain the FY 1994 operating level and efforts at the Lab to expand interest by non-federal entities in DOE activities which are no longer part of the DOE mission. This is a small part of a larger effort to commercialize DOE products due to change in focus and budgetary constraints.	Miscellaneous services for state and local governments and universities. Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds.
	$ 812	$ 4,049	$ 2,906
Oak Ridge National Lab	Miscellaneous services for state and local governments such as providing treated water to the City of Oak Ridge. Funding supplemented by the use of uncosted balances.	Miscellaneous services for state and local governments such as providing treated water to the City of Oak Ridge. Increase reflects the need to maintain FY 1994 operating levels and efforts to expand interest by non-federal entities in DOE activities which are no longer part of the DOE mission. This is a small part of a larger effort to commercialize DOE products due to change in focus and budgetary constraints.	Miscellaneous services for state and local governments such as providing treated water to the City of Oak Ridge. Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds.
	$ 864	$ 2,185	$ 1,411
Office of Scientific and Technical Info	Operation of the Superconductivity Information System and the National Energy Software Center, both of which provide central depositories of these valuable Departmental resources for use by DOE researchers as well as outside users.	Operation of the Superconductivity Information System and the National Energy Software Center, both of which provide central depositories of these valuable Departmental resources for use by DOE researchers as well as outside users. Increase related to increased sales.	Operation of the Superconductivity Information System and the National Energy Software Center, both of which provide central depositories of these valuable Departmental resources for use by DOE researchers as well as outside users.
	$ 617	$ 1,000	$ 1,000

III. Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Richland	Miscellaneous services at Pacific Northwest Laboratory (PNL) and Kaiser Engineering.	Miscellaneous services at Pacific Northwest Laboratory (PNL) and Kaiser Engineering.	Miscellaneous services at Pacific Northwest Laboratory (PNL) and Kaiser Engineering. Increase is due to additional miscellaneous work for Japan under umbrella agreement.
	$ 300	$ 32	$ 532
Oakland	Particle physics collaboration with Japan and other development efforts at the Stanford Linear Accelerator Center (SLAC).	Particle physics collaboration with Japan and other development efforts at the Stanford Linear Accelerator Center (SLAC).	Particle physics collaboration with Japan and other development efforts at the Stanford Linear Accelerator Center (SLAC). Decrease related to declining activity in other development efforts.
	$ 4,000	$ 4,025	$ 2,500
National Renewable Energy Laboratory	Miscellaneous services associated primarily with solar energy research transfered to the Reimbursable Work for Others program. State and local government services funded with the use of uncosted balances.	State and local government services.	State and local government services.
	$ 0	$ 100	$ 100
Cooperative R&D Agreements	To accomodate the estimated share of Coopeative Research and Development Agreement (CRADAs) participants who will not be able to provide their funding share in advance. Examples include states with constitutional provisions similar to Texas' and small businesses which cannot afford to forego the interest earned by the escrow while it is under DOE control.	To accomodate the estimated share of Coopeative Research and Development Agreement (CRADAs) participants who will not be able to provide their funding share in advance. Examples include states with constitutional provisions similar to Texas' and small businesses which cannot afford to forego the interest earned by the escrow while it is under DOE control. Change based on the estimated decrease in level of activity.	To accomodate the estimated share of Cooperative Research and Development Agreement (CRADAs) participants who will not be able to provide their funding share in advance. Examples include states with constitutional provisions similar to Texas' and small businesses which cannot afford to forego the interest earned by the escrow while it is under DOE control.
	$ 5,000	$ 2,000	$ 2,000

III. Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Texas Contribution to the SSC	Congressional action on the FY 1994 Department's request canceled the construction of the SSC. Funding appropriated in FY 1994 for SSC will not be utilized. These funds will be used as an offset to the FY 1995 Cost of Work for Others activity and to fund locality pay in the Departmental Administration appropriation.	Congressional action on the FY 1994 Department's request canceled the construction of the SSC. Therefore, no funding is requested.	Congressional action on the FY 1994 Department's request canceled the construction of the SSC. Therefore, no funding is requested.
	$ 30,000	$ 0	$ 0
Subtotal, Services Performed, Operating	$ 52,087	$ 20,856	$ 19,826
Cost of Work for Others	$ 61,626	$ 24,356	$ 22,826

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

DEPARTMENTAL ADMINISTRATION

I. Preface: Use of Unobligated Balances

II. A. Summary Table: Use of Unobligated Balances

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Chief Financial Officer	$ 0	$ 0	$ -196	>999
Economic Impact & Diversity	0	0	-54	>999
Cost of Work	-54,927	-30,707	-11,269	+ 63
Total, Use of Unobligated Balances	$ -54,927	$ -30,707	$ -11,519	+ 62

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Use of Unobligated Balances			
Chief Financial Officer			FY 1994 unobligated balances in support services to be used as an offset to the FY 1996 support services budget request.
	$ 0	$ 0	-$ 198
Economic Impact & Diversity			FY 1994 unobligated balances in Program Support to be used as an offset to the FY 1996 budget request for travel (-16) and support services (-38).
	$ 0	$ 0	-$ 54
Cost of Work	FY 1993 unobligated balances in Cost of Work used as an offset to the FY 1994 budget. (-53,927) and (-1,000) used for an internal reprogramming to personnel compensation.	FY 1994 unobligated balances from the cancellation of SSC will be used as an offset to the FY 1995 budget.	FY 1994 unobligated balances in Cost of Work to be used as an offset to the FY 1996 Cost of Work budget request.
	-$ 54,927	-$ 30,707	-$ 11,269
Use of Unobligated Balances	-$ 54,927	-$ 30,707	-$ 11,519

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

REVENUES

I. Preface: Revenues Associated with Cost of Work for Others

Associated Revenues represents the full-cost recovery offset to Cost of Work for Others, the program associated with providing products and services to our customers.

II. A. Summary Table: Revenues Associated with Cost of Work for Others

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Products Sold, Operating				
Idaho	$ 0	$ 0	$ 0	0
Oakland	-4,383	0	0	0
Savannah River	-3,725	-3,500	-3,000	+ 14
Subtotal, Products Sold, Operating	$ -8,108	$ -3,500	$ -3,000	+ 14
Services Performed, Operating				
Albuquerque	$ -2,333	$ -3,100	$ -3,100	0
Argonne	-559	-50	-265	-430
Brookhaven	-1,480	-1,000	-1,413	- 41
Chicago	-103	-100	-150	- 50
Idaho	-547	-1,327	-350	+ 74
Lawrence Berkeley	-4,946	-5,212	-2,369	+ 55
Lawrence Livermore	-1,726	-514	-3,912	-661
Oak Ridge	-2,075	-4,248	-3,490	+ 18
Oak Ridge National Lab	-2,447	-2,780	-1,418	+ 49
Office of Scientific and Technical Info	-549	-1,158	-1,160	0
Richland	-861	-36	-537	-999
Oakland	-4,344	-4,025	-2,500	+ 38
National Renewable Energy Laboratory	0	-124	-124	0
Cooperative R&D Agreements	-21	-2,000	-2,000	0
Texas Contribution to the SSC	0	0	0	0
Subtotal, Services Performed, Operating	$ -21,991	$ -25,674	$ -22,788	+ 11
Total, Revenues Associated with Cost of Work for Others	$ -30,099	$ -29,174	$ -25,788	+ 12

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Revenues Associated with Cost of Work for Others			
Products Sold, Operating			
Idaho	As a by-product of a geothermal well, natural gas is sold to private firms at the Idaho National Engineering Laboratory (INEL). Estimate includes costs for production, storage and sales.	Project at the Geothermal well has been discontinued. Natural gas is not longer collected. No revenues are expected.	Project at the Geothermal well has been discontinued. Natural gas is not longer collected. No revenues are expected.
	$ 0	$ 0	$ 0
Oakland	As a by-product of steam generator testing at the Energy Technology Engineering Center (ETEC), steam is sold to Southern California Edison Co. This level of funding is based on the estimated capacity of the particular generator that is being tested for the given fiscal year.	The Sodium Component Test Installation (SCTI) and ETEC will be shut down in FY 1995. Therefore no revenue is expected.	The Sodium Component Test Installation (SCTI) and ETEC will be shut down in FY 1995. Therefore no revenue is expected.
	-$ 4,383	$ 0	$ 0
Savannah River	Costs associated with forest management and the sale of timber with the U.S. Forest Service.	Revenues associated with forest management and the sale of timber with the U.S. Forest Service. Decrease due to drop in timber prices. FY 1993 and FY 1994 included historically high timber prices.	Revenues associated with forest management and the sale of timber with the U.S. Forest Service. Decrease related to decrease in timber operations.
	-$ 3,725	-$ 3,500	-$ 3,000
Subtotal, Products Sold, Operating	-$ 8,108	-$ 3,500	-$ 3,000

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III. Revenues Associated with Cost of Work for Others (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Services Performed, Operating			
Albuquerque	Miscellaneous services for state and local governments such as, highly specialized computer and automation support at the Sandia and Los Alamos National Laboratories the sale of utilities (water) to the community of Los Alamos at Los Alamos National Laboratory.	Miscellaneous services for state and local governments such as, highly specialized computer and automation support at the Sandia and Los Alamos National Laboratories and the sale of utilities (water) to the community of Los Alamos at Los Alamos National Laboratory. Decrease reflects forecast of utility sales by project office.	Miscellaneous services for state and local governments such as, highly specialized computer and automation support at the Sandia and Los Alamos National Laboratories and the sale of utilities (water) to the community of Los Alamos at Los Alamos National Laboratory. Increase reflects current estimate for water sales.
	-$ 2,333	-$ 3,100	-$ 3,100
Argonne	Work for state and local governments such as the Advanced Software Development and Comercialization project with the State of Illinois.	Work for state and local governments such as the Advanced Software Development and Commercialization project with the State of Illinois.	Work for state and local governments such as the Advanced Software Development and Commercialization project with the State of Illinois. Increase for coal research.
	-$ 559	-$ 50	-$ 265
Brookhaven	Pergamon Press and miscellaneous services.	Pergamon Press and miscellaneous services.	Receipts from sale of Pergamon Press and other miscellaneous services. Increase for University research.
	-$ 1,480	-$ 1,000	-$ 1,413
Chicago	Reference materials at the New Brunswick Laboratory and use of the Sematech plasma etching center and other miscellaneous services at the Princeton Plasma Physics Laboratory (PPPL).	Reference materials at the New Brunswick Laboratory. Decrease due to Princeton Plasma Physics Laboratory's transfer of work to Reimbursable Work for Others.	Reference materials at the New Brunswick Laboratory. Increase related to level of sales.
	-$ 103	-$ 100	-$ 150

III. Revenues Associated with Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho	Testing of Oak Ridge Associated Universities' (ORAU) Recoil Mass Spectrometer and Irradiation services; and storage of Three Mile Island (TMI) abnormal waste (reactor filters).	Irradiation services; and storage of Three Mile Island (TMI) abnormal waste (reactor filters). Increase associated with expected Technology Transfer and Industrial Partnerships to begin by FY 1995.	Irradiation services; and storage of Three Mile Island (TMI) abnormal waste (reactor filters). Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds.
	-$ 547	-$ 1,327	-$ 350
Lawrence Berkeley	Particle physics collaboration with Japan and work for state and local governments and non-profit organizations such as seismic monitoring techniques for the State Lands Commission; and various services for universities.	Work for state and local governments and non-profit organizations such as seismic monitoring techniques for the State Lands Commission; and various services for universities. Decrease due to reduced spending by states and local governments.	Work for state and local governments and non-profit organizations such as seismic monitoring techniques for the State Lands Commission; and various services for universities. Decrease due to completion of the NIH drosophila genome experiment.
	-$ 4,946	-$ 5,212	-$ 2,369
Lawrence Livermore	Miscellaneous services performed for industry and foreign governments, state and local governments and non-profit organizations such as the study of non-destructive evaluations applied to bridges and structural modal analysis for the State of California.	Miscellaneous services performed for state and local governments and non-profit organizations such as the study of non-destructive evaluations applied to bridges and structural modal analysis for the State of California. Decrease reflects the completed transfer of work for industry and foreign governments to Reimbursable Work of Others.	Miscellaneous services performed for state and local governments and non-profit organizations such as the study of non-destructive evaluations applied to bridges and structural modal analysis for the State of California. Increase related to expanded seismic work for Southern California Highway Administration.
	-$ 1,726	-$ 514	-$ 3,912

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III. Revenues Associated with Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge	Miscellaneous services for state and local governments and universities. Revenues will be supplemented by uncosted balances.	Miscellaneous services for state and local governments and universities. Increase reflects the need to maintain FY 1994 operating levels and efforts at the lab to expand interest by non-federal entities in DOE activities which are no longer part of the DOE mission. This is a small part of a larger effort to commercialize DOE products due to change in focus and budgetary constraints.	Miscellaneous services for state and local governments and universities. Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds.
	-$ 2,075	-$ 4,248	-$ 3,490
Oak Ridge National Lab	Miscellaneous services for state and local governments such as providing treated water to the City of Oak Ridge. Revenues will be supplemented by uncosted balances.	Miscellaneous services for state and local governments such as providing treated water to the City of Oak Ridge. Increase reflects the need to maintain FY 1994 operating levels and efforts to expand interest by non-federal entities in DOE activities which are no longer part of the DOE mission. This is a small part of a larger effort to commercialize DOE products due to change in focus and budgetary constraints.	Miscellaneous services for state and local governments such as providing treated water to the City of Oak Ridge. Decrease associated with technology transfer work to be performed in Cost of Work for Others CRADA activity or Technology Transfer program funds.
	-$ 2,447	-$ 2,780	-$ 1,418
Office of Scientific and Technical Info	Operation of the Superconductivity Information System and the National Energy Software Center, both of which provide central depositories of these valuable Departmental resources for use by DOE researchers as well as outside users.	Operation of the Superconductivity Information System and the National Energy Software Center, both of which provide central depositories of these valuable Departmental resources for use by DOE researchers as well as outside users. Increase related to increased sales.	Operation of the Superconductivity Information System and the National Energy Software Center, both of which provide central depositories of these valuable Departmental resources for use by DOE researchers as well as outside users.
	-$ 549	-$ 1,158	-$ 1,160

III. Revenues Associated with Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Richland	Miscellaneous services at Pacific Northwest Laboratory (PNL) and Kaiser Engineering. -$ 861	Miscellaneous services at Pacific Northwest Laboratory (PNL) and Kaiser Engineering. -$ 36	Miscellaneous services at Pacific Northwest Laboratory (PNL) and Kaiser Engineering. Increase due to additional miscellaneous work for Japan under umbrella agreement. -$ 537
Oakland	Particle physics collaboration with Japan and other development efforts at the Stanford Linear Accelerator Center (SLAC). -$ 4,344	Particle physics collaboration with Japan and other development efforts at the Stanford Linear Accelerator Center (SLAC). -$ 4,025	Particle physics collaboration with Japan at the Stanford Linear Accelerator Center (SLAC). Decrease related to declining activity in other development efforts. -$ 2,500
National Renewable Energy Laboratory	Miscellaneous services associated primarily with solar energy research transfered to the Reimbursable Work for Others program. State and local government services funded with the use of uncosted balances. $ 0	State and local government services. -$ 124	State and local government services. -$ 124
Cooperative R&D Agreements	To accommodate the estimated share of Cooperative Research and Development Agreement (CRADAs) participants who will not be able to provide their funding share in advance. Examples include states with constitutional provisions similar to Texas' and small businesses which cannot afford to forego the interest earned by the escrow while it is under DOE control. -$ 21	To accommodate the estimated share of Cooperative Research and Development Agreement (CRADAs) participants who will not be able to provide their funding share in advance. Examples include states with constitutional provisions similar to Texas' and small businesses which cannot afford to forego the interest earned by the escrow while it is under DOE control. -$ 2,000	To accommodate the estimated share of Cooperative Research and Development Agreement (CRADAs) participants who will not be able to provide their funding share in advance. Examples include states with constitutional provisions similar to Texas' and small businesses which cannot afford to forego the interest earned by the escrow while it is under DOE control. -$ 2,000

III. Revenues Associated with Cost of Work for Others (Cont'd):
Services Performed, Operating (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Texas Contribution to the SSC	Congressional action on the Department's request canceled the construction of the SSC.	Congressional action on the FY 1994 Department's request canceled the construction of the SSC.	Congressional action on the FY 1994 Department's request canceled the construction of the SSC.
	$ 0	$ 0	$ 0
Subtotal, Services Performed, Operating	-$ 21,991	-$ 25,674	-$ 22,788
Revenues Associated with Cost of Work for Others	-$ 30,099	-$ 29,174	-$ 25,788

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEPARTMENTAL ADMINISTRATION
(dollars in thousands)

KEY ACTIVITY SUMMARY

REVENUES

I. Preface: Miscellaneous Revenues

Miscellaneous Revenues are received from the sale of by-products that have no cost associated with the Departmental Administration appropriation. These items are by-products of activities funded by other on-going departmental programs and are collected as miscellaneous revenues. Included in this estimate are revenues collected from the Reimbursable Work program for added factor and depreciation.

II. A. Summary Table: Miscellaneous Revenues

Program Activity	FY 1994 Enacted	FY 1995 Enacted	FY 1996 Request	% Change
Albuquerque	$ -1,267	$ -1,000	$ -1,000	0
Idaho	-14,615	-15,400	-15,400	0
Pittsburgh	-18,783	-23,800	-23,800	0
Added Factor and Depreciation	-44,052	-53,302	-53,302	0
Oak Ridge-USEC Lease Payments	-2,000	-2,016	-2,016	0
Other Revenues	-1,173	-1,000	-1,000	0
Total, Miscellaneous Revenues	$ -81,890	$ -96,518	$ -96,518	0

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Miscellaneous Revenues			
Albuquerque	Lease of facilities (gas and electric) to utility company at the Los Alamos National Laboratory at Albuquerque Field Office. Receipts will go to Treasury and offset the Departmental Administration appropriation in accordance with Inspector General recommendations.	Lease of facilities (gas and electric) to utility company at the Los Alamos National Laboratory at Albuquerque Field Office. Receipts will go to Treasury and offset the Departmental Administration appropriation in accordance with Inspector General recommendations.	Lease of facilities (gas and electric) to utility company at the Los Alamos National Laboratory at Albuquerque Field Office. Receipts will go to Treasury and offset the Departmental Administration appropriation in accordance with Inspector General recommendations.
	-$ 1,267	-$ 1,000	-$ 1,000
Idaho	Due to a Presidential decision to stop nuclear fuel reprocessing, new procedures were developed regarding the costs associated with the nuclear cores used to power the Department of the Navy's ships. These procedures were developed in co-ordination with Navy. Navy will be billed for costs incurred at the Idaho Chemical Processing Plant for handling and basin storage of spent fuel cores.	Due to a Presidential decision to stop nuclear fuel reprocessing, new procedures were developed regarding the costs associated with the nuclear cores used to power the Department of the Navy's ships. These procedures were developed in co-ordination with Navy. Navy will be billed for costs incurred at the Idaho Chemical Processing Plant for handling and basin storage of spent fuel cores.	Due to a Presidential decision to stop nuclear fuel reprocessing, new procedures were developed regarding the costs associated with the nuclear cores used to power the Department of the Navy's ships. These procedures were developed in co-ordination with Navy. Navy will be billed for costs incurred at the Idaho Chemical Processing Plant for handling and basin storage of spent fuel cores.
	-$ 14,615	-$ 15,400	-$ 15,400
Pittsburgh	The Department of the Navy will still reimburse Pittsburgh for the nuclear material burn-up while the core is operational. As part of the new agreement regarding the termination of reprocessing, Pittsburgh will bill Navy for the residual material (remaining uranium) in the spent core once it is received at Idaho.	The Department of the Navy will still reimburse Pittsburgh for the nuclear material burn-up while the core is operational. As part of the new agreement regarding the termination of reprocessing, Pittsburgh will bill Navy for the residual material (remaining uranium) in the spent core once it is received at Idaho.	The Department of the Navy will still reimburse Pittsburgh for the nuclear material burn-up while the core is operational. As part of the new agreement regarding the termination of reprocessing, Pittsburgh will bill Navy for the residual material (remaining uranium) in the spent core once it is received at Idaho.
	-$ 18,783	-$ 23,800	-$ 23,800

III. Miscellaneous Revenues (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Added Factor and Depreciation	Added factor charges collected from other federal agencies as well as non-federal entities for Reimbursable activity conducted by the Department in accordance with full-cost recovery policy.	Added factor and depreciation charges collected from other federal agencies as well as non-federal entities for Reimbursable activity conducted by the Department in accordance with full-cost recovery policy.	Added factor and depreciation charges collected from other federal agencies as well as non-federal entities for Reimbursable activity conducted by the Department in accordance with full-cost recovery policy.
	-$ 44,052	-$ 53,302	-$ 53,302
Oak Ridge-USEC Lease Payments	Lease of facilities - including Gaseous Diffusion Plants at Oak Ridge and Portsmouth - by United States Enrichment Corporation to reimburse the Department. Operating cost are collected in a reimbursable account. Capital costs of facilities (depreciation) are deposited in U.S. Treasury as Miscellaneous Receipts.	Lease of facilities - including Gaseous Diffusion Plants at Oak Ridge and Portsmouth - by United States Enrichment Corporation to reimburse the Department. Operating cost are collected in a reimbursable account. Capital costs of facilities (depreciation) are deposited in U.S. Treasury as Miscellaneous Receipts.	Lease of facilities - including Gaseous Diffusion Plants at Oak Ridge and Portsmouth - by United States Enrichment Corporation to reimburse the Department. Operating cost are collected in a reimbursable account. Capital costs of facilities (depreciation) are deposited in U.S. Treasury as Miscellaneous Receipts.
	-$ 2,000	-$ 2,016	-$ 2,016
Other Revenues	Estimate based on current rate of collections for various miscellaneous revenues collected at all the sites. Examples range from the sale of hunting and fishing licenses to reimbursement from reimbursable details regarding such anomalies as the Hurricane Hugo relief effort.	Estimate based on current rate of collections for various miscellaneous revenues collected at all the sites. Examples range from the sale of hunting and fishing licenses to reimbursement from reimbursable details regarding such anomalies as the Hurricane Hugo relief effort.	Estimate based on current rate of collections for various miscellaneous revenues collected at all the sites. Examples range from the sale of hunting and fishing licenses to reimbursement from reimbursable details regarding such anomalies as the California earthquake relief effort.
	-$ 1,173	-$ 1,000	-$ 1,000
Miscellaneous Revenues	-$ 81,890	-$ 96,518	-$ 96,518

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DEPARTMENTAL ADMINISTRATION
PERFORMANCE GOALS AND MEASURES MATRIX

Performance Goals	Performance Measures	CFO	HR	ED	FM	OPS
Deficit Control and Administrative Productivity						
-Reduce FY 1996 administrative expenses in Departmental Administration by 3%, adjusted for inflation	-FY 1995 budget baseline for travel, support services, program support	X				
-Reduce FTEs in accordance with National Performance Review goals	-FY 1995 FTE budget baseline for personnel compensation and benefits		X			
Human Resources						
-Increase supervisor-employee ratio to DOE goal of 10:1 in 1995	-1993 supervisor-employee ratio of 4.7:1	X	X	X	X	X
Quality Management						
-Improve DOE program/financial customer satisfaction to achieve 93%	-1993 CFO baseline survey of DOE program customer satisfaction of 75%	X				

KEY:

CFO Chief Financial Officer
HR Human Resources and Administration
ED Economic Impact and Diversity
FM Field Management
OPS Operations Offices

Performance Goals	Performance Measures	CFO	HR	ED	FM	OPS
Contract Reform						
-Improve contract management and administration by performing the following elements of contract reform: . Increasing competition . Protecting workers, public, environment . Diversity in solicitations . Results oriented Statements of Work . Clear performance criteria and measures . Performance based incentives . Increased financial accountability . Increased utilization of FAR-based cost principles . Increased use of fixed priced contracts . Encourage cost reductions via incentives	-Incorporate full range of contract reform elements in seven major DOE contracts expiring in FY 1996: . Princeton Plasma Physics Lab . Savannah River . Hanford . Oak Ridge . Nevada . Fermi Lab . Pantex		X			X
	-Establish a methodology for a baseline by which savings can be measured	X	X		X	X
Electronic Commerce						
-Conduct small purchases through electronic data interchange at eleven contracting activities	-Four sites test four software systems by 9/95 -Install system at four sites by 12/95 -Install system at three additional sites by 6/96 -Seven sites operational by 9/96 -Install system at four additional sites by 10/96 -Total of 11 sites operational by 12/96 -Total dollar amount of all Federal Acquisition Network (FACNET) purchase orders in FY 1995 -Total number of FACNET purchase orders in FY 1995 -Total number of FACNET solicitations		X			X

Performance Goals	Performance Measures	CFO	HR	ED	FM	OPS
Budget and Financial						
M&O Indirect Costs - Protect DOE facility maintenance funding while reducing M&O indirect costs to 33.4%	-FY 1992 baseline of 36.7%				X	X
Budget Justification Documents - Reduce DOE Congressional budget justification documents to 2,500 pages in FY 1998	-FY 1994 baseline of 4,523 pages	X				
FY 1996 DOE Federal Managers' Financial Integrity Act (FMFIA) Report to the President- Obtain an Inspector General opinion that is free of significant findings	-FY 1994 FMFIA Report to the President - no significant findings	X				X
Compliance Reviews - Conduct CFO financial compliance reviews at Operations Offices on three year cycle, with followup implementation goal of 90% of findings and recommendations	-Cycle ending FY 1994 baseline of 83% implementation of findings and recommendations	X				X

Performance Goals	Performance Measures	CFO	HR	ED	FM	OPS
Accounting Systems - Centralize DOE accounting systems in current technology to better support programs and facilitate compatibility with OMB and Treasury systems	-Installation of the Management analysis and Reporting System (MARS) Phase II by May 1995	X			X	X
Public Receivables - Less than 10% of public receivables (except petroleum overcharge receivables under litigation) are delinquent	-FY 1994 baseline of 6% delinquency	X				X
Commercial Payments - 95% are made on time	-FY 1994 DOE-wide baseline of 96% prompt payment	X				X
Payroll - 90% of DOE-wide payroll made by electronic transfer	-FY 1994 DOE-wide baseline of 89% payroll via electronic transfer	X				X
Financial Statements - No qualified opinions on financial statements audited by the Inspector General	-FY 1993 audited financial statements baseline - ten unqualified; one disclaimed	X				X
Travel Vouchers - DOE-wide travel vouchers processed within ten days	-FY 1994 baseline of 14 days for processing Headquarters travel vouchers	X				X
External Financial Reports - OMB and Treasury reports submitted on time	-FY 1994 baseline of 71% external reports submitted on time	X				X
Other						
Small and Disadvantaged Business - Maintain or exceed contract awards to small businesses in FY 1996	-FY 1994 baseline of 25% of total DOE contract dollars going to small and disadvantaged businesses			X		

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Inspector General

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Office of the Inspector General					
Inspector General	30.4	30.4	32.4	32.4	32.9
Use of Prior Year Balances & Other Adjustments	——	——	-6.0	-6.0	-1.9
Total, Office of the Inspector General	30.4	30.4	26.5	26.5	31.0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Office of the Inspector General

For necessary expenses of the Office of the Inspector General in carrying out the provisions of the Inspector General Act of 1978, as amended, [$26,465,000] $30,998,000, to remain available until expended.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
OFFICE OF INSPECTOR GENERAL

OVERVIEW

OFFICE OF INSPECTOR GENERAL

The purpose of the Office of Inspector General (OIG) is stated in Section 4 of the Inspector General Act of 1978, as amended, 5 U.S.C. App. 3. Section 4(a) reads:

(a) It shall be the duty and responsibility of each Inspector General, with respect to the establishment within which his Office is established

(1) to provide policy direction for and to conduct, supervise, and coordinate audits and investigations relating to the programs and operations of such establishment;

(2) to review existing and proposed legislation and regulations relating to programs and operations of such establishment and to make recommendations in the semiannual reports required by section 5(a) concerning the impact of such legislation or regulations on the economy and efficiency in the administration of programs and operations administered or financed by such establishment or the prevention and detection of fraud and abuse in such programs and operations;

(3) to recommend policies for, and to conduct, supervise, or coordinate other activities carried out or financed by such establishment for the purpose of promoting economy and efficiency in the administration of, or preventing and detecting fraud and abuse in, its programs and operations;

(4) to recommend policies for, and to conduct, supervise, or coordinate relationships between such establishment and other Federal agencies, State and local governmental agencies, and nongovernmental entities with respect to (A) all matters relating to the promotion of economy and efficiency in the administration of, or the prevention and detection of fraud and abuse in, programs and operations administered or financed by such establishment, or (B) the identification and prosecution of participants in such fraud or abuse; and

(5) to keep the head of such establishment and the Congress fully and currently informed, by means of the reports required by section 5 and otherwise, concerning fraud and other serious problems, abuses, and deficiencies relating to the administration of programs and operations administered or financed by such establishment, to recommend corrective action concerning such problems,

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abuses, and deficiencies, and to report on the progress made in implementing such corrective action.

OFFICE OF AUDITS

The Office of Audits is responsible for the internal auditing of the Department of Energy. The mission includes performance audits, including economy and efficiency and program results audits, and financial audits including audits of financial statements and financial-related activities. The audits are conducted in conformance with generally accepted Government auditing standards. The Office of Audits' goals are:

- o to promote economy, efficiency, and effectiveness in Department programs and operations.
- o to detect and deter fraud, abuse and violations of law in Department programs and operations.

The Office of Audits conducts independent evaluations of DOE's operating and administrative programs including an assessment of the Department's financial and management control systems and procedures. Recommendations are made to management to correct areas where improvements are needed.

The Office of Audits is committed to the following objectives:

- o to have a highly-trained, competent, innovative, mobile, performance-oriented, professional audit organization that is current with today's technology and is respected.
- o to provide to the DOE a full-scope, quality, service-oriented, cost-effective and well-balanced audit service that produces timely reports, meets legislative requirements, and meets the highest standards of the audit profession.
- o to have an audit and resource planning system that will effectively "target" projects and functions in need of audit; determine and demonstrate the amount of audit resources required to meet long- and short-term audit needs of the Department; and direct audit resources to those areas in greatest need of audit.
- o to effectively manage audits and evaluations done under contract.
- o to contribute to multi-agency audits and system development projects, and actively participate in activities sponsored by the President's Council on Integrity and Efficiency, the National Intergovernmental Audit Forum and like organizations.

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OFFICE OF INVESTIGATIONS

The Office of Investigations performs the statutory investigative duties which relate to the promotion of economy and efficiency in the administration of, or the prevention or detection of fraud or abuse in, programs and operations of the Department. Major objectives of the Office of Investigations are:

- o to provide quality investigations which facilitate positive change in the Department's operations. Investigations personnel, located at only 15 sites, are responsible for providing service and support to the 249 Department sites nationwide.

- o to promote the effective, efficient and economical operation of Department of Energy programs and initiatives, particularly in the following areas:

  - Environment, safety and health, including environmental restoration, waste management and pollution prevention.
  - Energy efficiency and renewable energy.
  - Operation and mission enhancement of national laboratories, including technology transfer.
  - Defense Programs and related issues such as security and nonproliferation activities.
  - Strategic Petroleum Reserve and other energy independent programs.
  - Special programs, such as Waste Isolation Pilot Plant Project Integration, Tokamak Physics Experiment, natural gas research and development, and Clean Car Initative.
  - Safeguards in administrative operations with regard to cash funds, travel, property, time abuse, and mischarging.

- o to improve the investigative program by more timely identification of wrongdoing by Departmental and/or contractor employees leading to administrative actions, convictions, monetary recoveries and/or suspensions/debarments.

- o to conduct joint projects with the Offices of Audits and Inspections with respect to Departmental activities in procurement; environment, safety and health; effective utilization of national laboratories; energy conservation and efficiency; and other concerns identified by the Secretary and the Office of Management and Budget.

- o to institute programs to alert Departmental officials to fraud indicators.

- o to be better able to accommodate the increasing number of complex cases involving joint effort with other

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Federal law enforcement agencies and prosecutors.

- to devote sufficient resources to cases that are highly labor intensive, such as environmental, weatherization and technology transfer cases.

OFFICE OF INSPECTIONS

The Office of Inspections is established to meet the strategic objectives of the Office of Inspector General by providing independent and objective inspections and analyses of the effectiveness, efficiency, and economy of the programs and operations of the Department of Energy. This functional area also is responsible for reviews of administrative allegations received by the Office of Inspector General and processing Inspector General referrals to Department management for appropriate action. An inspection is an examination of a program, function or activity. The purposes of an inspection are:

- to evaluate the effectiveness and/or efficiency of an operation.

- to determine compliance with laws and regulations.

- to evaluate program results.

- to detect or prevent fraud, waste or mismanagement.

An inspection may be predicated on an administrative allegation. Inspections may provide more immediate and timely feedback to program managers and, in some instances, may provide a source of analytical information for criminal investigations or audits. Current efforts emphasize the areas of environment, safety and health, safeguards and security, intelligence and management issues that impact on ecomony and efficiency of operations, and other high priority reviews of initiatives important to the Secretary's priorities for the Department assigned by the Inspector General.

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STREAMLINING PLAN

The Office of Inspector General (OIG) submitted its revised Streamlining Plan to the Department on September 14, 1994. The Plan describes several actions taken by the OIG to streamline its operations in accordance with the National Performance Review. For example, the OIG has made significant progress in, or developed specific plans for, reducing targeted positions, delayering the organizational structure, and reducing supervisory ratios.

OUTPUT MEASURES

There were 192 audits completed in FY 1994. It is estimated that FY 1995 and FY 1996 will result in 200 audits completed each year.

There were 437 investigations closed in FY 1994. It is estimated that FY 1995 and FY 1996 will result in a more normal output level of 235 investigations closed each year.*

There were 511 inspection matters closed in FY 1994. It is estimated that FY 1995 and FY 1996 will result in 460 inspection matters closed each year (a decrease from FY 1994 due to a planned reduction in the number of referrals to management which require fewer work hours than inspections which are expected to increase).

* The number of investigations closed increased significantly in FY 1994 due to formation of a special task force to identify and close administrative cases that could be handled by referral to management or did not warrant additional investigation. This reduced the backlog of administrative cases in FY 1994, and has resulted in a stronger emphasis on cases which have prosecutive potential.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
INSPECTOR GENERAL
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

INSPECTOR GENERAL

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Office of Audits					
Operating Expenses	$ 17,422	$ 17,788	$ 0	$ 17,788	$ 18,452
Capital Equipment	0	0	0	0	0
Subtotal, Office of Audits	$ 17,422	$ 17,788	$ 0	$ 17,788	$ 18,452
Office of Investigations					
Operating Expenses	$ 5,026	$ 5,983	$ 0	$ 5,983	$ 6,445
Capital Equipment	0	0	0	0	0
Subtotal, Office of Investigations	$ 5,026	$ 5,983	$ 0	$ 5,983	$ 6,445
Office of Inspections					
Operating Expenses	$ 2,937	$ 3,046	$ 0	$ 3,046	$ 3,178
Capital Equipment	0	0	0	0	0
Subtotal, Office of Inspections	$ 2,937	$ 3,046	$ 0	$ 3,046	$ 3,178
Program Management and Support					
Operating Expenses	$ 4,977	$ 5,608	$ 0	$ 5,608	$ 4,838
Capital Equipment	0	0	0	0	0
Subtotal, Program Management and Support	$ 4,977	$ 5,608	$ 0	$ 5,608	$ 4,838
Subtotal, INSPECTOR GENERAL	$ 30,362	$ 32,425	$ 0	$ 32,425	$ 32,913
Adjustment	0	-5,960 a/	0	-5,960	-1,915 b/
TOTAL	$ 30,362	$ 26,465	$ 0	$ 26,465	$ 30,998
Summary					
Operating Expenses	$ 30,362	$ 26,465	$ 0	$ 26,465	$ 30,998
Capital Equipment	0	0	0	0	0

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LEAD TABLE - INSPECTOR GENERAL (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Total Program	$ 30,362	$ 26,465	$ 0	$ 26,465	$ 30,998
Staffing (FTEs)	358	356	0	356	356

Authorizations:
P.L. 95-452, "The Inspector General Act of 1978"

a/ Use of prior year unobligated balances.
b/ Use of prior year unobligated balances.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
INSPECTOR GENERAL
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

INSPECTOR GENERAL

FY 1995 Appropriation	$ 32,425
- Adjustment -	0
FY 1995 Adjusted	$ 32,425
- Transfer -	0
FY 1995 Comparable	$ 32,425
Office of Audits	
- Operating Expenses - Increase in personnel compensation and benefits reflecting full effect of FY 1995 pay increase, FY 1995 and FY 1996 locality pay increases, other base salary increases, and inflation.	+664
Office of Investigations	
- Operating Expenses - Increase in personnel compensation and benefits reflecting full effect of FY 1995 pay increase and investigator availability pay increase, FY 1995 and FY 1996 locality pay increases, other base salary increases, and inflation.	+462
Office of Inspections	
- Operating Expenses - Increase in personnel compensation and benefits reflecting full effect of FY 1995 pay increase, FY 1995 and FY 1996 locality pay increases, other base salary increases, and inflation.	+132
Program Management and Support	
- Operating Expenses - Decrease in contractual services offsetting increases as described above.	-770
FY 1996 CONGRESSIONAL Budget Request	$ 32,913

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
INSPECTOR GENERAL
(dollars in thousands)

KEY ACTIVITY SUMMARY

INSPECTOR GENERAL

I. Preface: Office of Audits

The Office of Audits is responsible for the internal auditing of the DOE. It provides policy direction and supervises, conducts and/or coordinates all internal and contracted audit activities for Department programs and operations. These operations include those conducted under contracts and grants, as well as those performed by Department employees. The mission includes performance audits, including economy and efficiency and program results audits, and financial audits, including audits of financial statements and financial-related audits. The Office of Audits also provides audit services for agencies for which audit cognizance is assigned to DOE under the Single Audit Act of 1984, P.L. 98-502. It is estimated that the cost of this activity is approximately $300,000 per year.

II. A. Summary Table: Office of Audits

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 17,422	$ 17,788	$ 18,452	$ 664
Capital Equipment	0	0	0	0
Total, Office of Audits	$ 17,422	$ 17,788	$ 18,452	$ 664

II. B. Laboratory and Facility Funding Table: Office of Audits

All Other	$ 17,422	$ 17,788	$ 18,452	$ 664
Total, Office of Audits	$ 17,422	$ 17,788	$ 18,452	$ 664

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Office of Audits			
Operating Expenses	Funding by Object Class: Personnel Compensation $10,748 Benefits 2,581 Travel 1,848 Contractor Services 2,245 $17,422	Funding by Object Class: Personnel Compensation $11,116 Benefits 2,713 Travel 1,886 Contractor Services 2,073 $17,788	Funding by Object Class: Personnel Compensation $11,560 Benefits 2,859 Travel 1,941 Contractor Services 2,092 $18,452
	During FY 1994, the Office of Audits continued to perform its duties within the Department, notwithstanding the material weakness of inadequate audit staffing and resource limitations established by the Secretary and reported to the President in the last three Federal Managers' Financial Integrity Act (FMFIA) letters, and cited in the General Accounting Office report (RCED-92-41). Adequate staffing is one of two prerequisites to downgrading this material weakness. (During FY 1993, 15 M&O internal audit staffs participated in the pilot program, which was begun in FY 1992 and was fully implemented in FY 1994.) The Office also continued implementation of the new cooperative audit strategy for integrated management and operating (M&O) contractors. Focus and audit coverage continued on the Office of Management and Budget high risk areas, the Department's five business strategies and critical areas enunciated by the Secretary; revenues received from Department activities such as electric power production and enriched uranium sales; the closing of the Superconducting Super Collider; and unallowable costs. Seventeen contractor staff years were	At an authorized staffing level of three fewer FTEs than the FY 1994 level, coverage of activities will be less than in FY 1994. It is estimated that 200 audits will be completed in FY 1995. ($17,788)	This level provides the same authorized staffing level as FY 1995. The latest mandated addition to the Office's workload, Value Engineering audits, will start during the latter part of the fiscal year. In addition, the audit of all FY 1996 financial statements during FY 1997 (as required by the Government Management Reform Act of 1994) will require establishment of specifications and controls during FY 1996 in preparation for performance of the audits. The Office of Audits began implementing the Chief Financial Officers (CFO) Act of 1990 by auditing the financial statements of a limited number of commercial activities and revolving funds in FY 1991. The Government Management Reform Act of 1994 requires audit of DOE financial statements for FY 1996. This will require performance of internal control reviews and other necessary audit steps during FY 1996 in preparation for the actual audit work in FY 1997. The full impact of this new requirement will be considered in the FY 1997 budget. It is estimated that 200 audits will be completed in FY 1996. ($18,452)

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III. Office of Audits (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	funded, of which 7 were used to do the required financial audits of 1 revolving fund and 10 commercial activities within the Department. Ten contractor staff years were retained as a source of specialized expertise throughout the Office of Inspector General. 192 audits were completed in FY 1994. ($17,422)		
	205.0 FTE $17,422	208.0 FTE $17,788	208.0 FTE $18,452
Capital Equipment			
	$0	$0	$0
Office of Audits	205.0 FTE $17,422	208.0 FTE $17,788	208.0 FTE $18,452

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
INSPECTOR GENERAL
(dollars in thousands)

KEY ACTIVITY SUMMARY

INSPECTOR GENERAL

I. Preface: Office of Investigations

The Office of Investigations performs the statutory investigative duties which relate to the promotion of economy and efficiency in the administration of, or the prevention or detection of fraud or abuse in, programs and operations of the Department. The Office investigates prohibited or improper activities against DOE by its contractors, vendors, employees and any others who have relationships with DOE. Priority is given to investigations of any apparent or suspected violations of statutes with criminal or civil penalties, especially procurement fraud, environmental, health and safety matters, and matters which reflect on the integrity and suitability of DOE officials. Suspected criminal violations are promptly reported to the Department of Justice for consideration for prosecution. In all instances, attention to correction of identified systemic deficiencies in DOE programs and operations is paramount.

The Office receives complaints and allegations from many sources: the Inspector General Hotline, Department management and employees, contractors, other Federal and state law enforcement agencies, the General Accounting Office, the Office of Management and Budget, the Congress, concerned public citizens, and special interest groups. These allegations and complaints are either investigated, referred to the Inspector General's Offices of Audits or Inspections or to the appropriate DOE Office, referred to another agency having primary investigative jurisdiction over the matter reported, or filed for future reference with no action taken.

The continuing emphasis on government reform has significantly increased the use of the Inspector General Hotline. Congressional interest in complaints is increasing.

II. A. Summary Table: Office of Investigations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 5,026	$ 5,983	$ 6,445	$ 462
Capital Equipment	0	0	0	0
Total, Office of Investigations	$ 5,026	$ 5,983	$ 6,445	$ 462

II. B. Laboratory and Facility Funding Table: Office of Investigations

All Other	$ 5,026	$ 5,983	$ 6,445	$ 462
Total, Office of Investigations	$ 5,026	$ 5,983	$ 6,445	$ 462

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Office of Investigations			
Operating Expenses	Funding by Object Class: Personnel Compensation $3,609 Benefits 867 Travel 392 Contractor Services 158 $5,026	Funding by Object Class: Personnel Compensation $4,329 Benefits 1,043 Travel 401 Contractor Services 210 $5,983	Funding by Object Class: Personnel Compensation $4,677 Benefits 1,134 Travel 412 Contractor Services 222 $6,445
	Currently, Office of Investigations personnel are located at 15 of the more than 130 sites operated by the Department. As of September 30, 1994, there were 310 open investigations. The magnitude of the case inventory is due in large part to an increasing reliance by Department and contractor employees on the Inspector General's Hotline. The Office has 2 FTEs assigned to operate the Hotline. The number of Hotline complaints continues to increase, from 89 in FY 1988 to 472 in FY 1994. The threshold for acceptance of complaints for investigation continues to rise due to the complexity of complaints and investigations, and the staff hours which are devoted to complex fraud and environment cases. During FY 1993 and FY 1994, approximately half of all complaints received were via the Inspector General's Hotline. During FY 1994, 437 investigations were completed (rate of completions in FY 1994 reflects formation of a special task force to reduce the case backlog). ($5,026)	At an authorized staffing level of two fewer FTEs than the FY 1994 level, the ability of the Office of Investigations to cover the workload described for FY 1994 will be less. Personnel compensation and benefits costs for FY 1995 reflect increase resulting from 25% investigator availability pay legislation. It is estimated that 235 investigations will be completed in FY 1995, reflecting resumption of a more normal output level after the special task force situation of FY 1994, and also accounting for increased staff hours resulting from 25% availability pay for investigators and recently realigned case opening criteria. ($5,983)	This level provides the same authorized staffing level as FY 1995 to cover the workload described for FY 1994 and FY 1995. It is estimated that 235 investigations will be completed in FY 1996, reflecting continuation of the situation described for FY 1995. ($6,445)

1794

III. Office of Investigations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	70.0 FTE $5,026	69.0 FTE $5,983	69.0 FTE $6,445
Capital Equipment			
	$0	$0	$0
Office of Investigations	70.0 FTE $5,026	69.0 FTE $5,983	69.0 FTE $6,445

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
INSPECTOR GENERAL
(dollars in thousands)

KEY ACTIVITY SUMMARY

INSPECTOR GENERAL

I. Preface: Office of Inspections

The Office of Inspections performs inspections and analyses to meet the strategic objectives of the Inspector General. This functional area also performs reviews of administrative allegations received by the Office of Inspector General and processes Inspector General referrals to Department management for appropriate action. An inspection is an examination of a program, project, function, activity or organization. The purpose of an inspection is to evaluate the effectiveness and/or the efficiency of an operation; to determine compliance with laws and regulations; or to evaluate program results. An inspection is also another technique used to detect or prevent fraud, waste, or mismanagement. Inspections may provide more immediate and timely feedback to program managers and, in some instances, provide a source of analytical information for audits or criminal investigations.

The Office provides a resource to the Inspector General as a flexible organization with a wide range of analytic skills and methodologies for conducting reviews and inquiries. These assignments often need immediate attention. In addition, the Office is often called upon to perform special inquiries that can require large amounts of staff time. These inquiries are usually initiated at the request of senior DOE management or by Congress.

II. A. Summary Table: Office of Inspections

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 2,937	$ 3,046	$ 3,178	$ 132
Capital Equipment	0	0	0	0
Total, Office of Inspections	$ 2,937	$ 3,046	$ 3,178	$ 132

II. B. Laboratory and Facility Funding Table: Office of Inspections

All Other	$ 2,937	$ 3,046	$ 3,178	$ 132
Total, Office of Inspections	$ 2,937	$ 3,046	$ 3,178	$ 132

1796

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Office of Inspections			
Operating Expenses	Funding by Object Class: Personnel Compensation $2,121 Benefits 509 Travel 223 Contractor Services 84 $2,937	Funding by Object Class: Personnel Compensation $2,193 Benefits 535 Travel 227 Contractor Services 91 $3,046	Funding by Object Class: Personnel Compensation $2,280 Benefits 565 Travel 234 Contractor Services 99 $3,178
	The number of administrative allegations being assigned to the Office of Inspections is rapidly growing. The Office of Inspector General (OIG) receives allegations through the IG Hotline and other sources. A significant number of these allegations are administrative in nature, and an increasing number of them are being reviewed by the Office of Inspections. Previously, Department management was required to spend its time responding to these allegations. 128 administrative allegations were reviewed in FY 1994. The Office of Inspections, in coordination with the Offices of Audits and Investigations, manages referrals of allegations that can be referred to Department management for inquiry and resolution. The Office receives, monitors, reviews, and processes these complaints, as well as the conclusions and sufficiency of remedial actions by DOE management. Management inspections are inspections of DOE systems. The Office has management inspections ongoing regarding DOE funds control systems, contractor cost reduction incentive programs, environmental quality,	At an authorized staffing level of one fewer FTE than in FY 1994, inspection coverage will be less than the FY 1994 level. It is estimated that 460 inspection matters will be closed during FY 1995. Due to the estimated increasing workload, the increasing carryover of open inspections, and the reduction of FTEs, an increasing number of inspections will have to be suspended or delayed. ($3,046)	At an authorized staffing level of 41 FTE in FY 1996, inspection coverage will remain the same as the FY 1995 level. It is estimated that 460 inspection matters will be closed during FY 1996. Due to the estimated increasing workload and the increasing carryover of open inspections, an increasing number of inspections will have to be suspended or delayed. ($3,178)

1797

III. Office of Inspections (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	property management and quality assurance. Past inspections, like those regarding administration of affiliated companies, administration of executive compensation, and post retirement health benefits programs, have revealed that contract administration is a weakness in the Department. The Department has the ultimate responsibility for assuring the efficient and economical use of taxpayer funds at the DOE facilities managed and operated by M&O contractors. Historically, the contract atructure has resulted in less than an arms length relationship with the contractors and limits the authority of the Department to perform contract administration. Approximately 80 percent of DOE's budget is consumed by M&O contractors. With the present staff we are limited in the areas of contract administration that we can cover. Property management activities at DOE Operations Offices are areas identified by the Secretary of Energy as a material weakness. Currently Management and Operating (M&O) contractors are responsible for billions of dollars in government property. Various complaints received by the OIG indicate a lack of inventory controls, improper storage and disposal of excess property and lack of accountability by the M&O contractors. The Secretary has also identified quality assurance as a reportable problem. The Office has two inspections open in this critical area. The Office of Inspections has the lead		

1798

III. Office of Inspections (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	responsibility for the OIG for oversight of DOE intelligence activities performed in accordance with Executive Order 12863, "President's Foreign Intelligence Advisory Board." The Office prepares the OIG's quarterly report to the Intelligence Oversight Board in accordance with the Executive Order. The Office also has the responsibility of coordinating the legislative and regulatory review function for the OIG. Under the IG Act of 1978, as amended, and the President's Council on Integrity and Efficiency's (PCIE) "Quality Standards for Federal Offices of Inspector General," the OIG is required to review and comment on existing and proposed legislation and regulations relating to Departmental programs and operations. During FY 1994, the Office worked 186 inspections and 529 memorandums referring allegations to management. 511 of these matters were closed during FY 1994. ($2,937)		
	42.0 FTE $2,937	41.0 FTE $3,046	41.0 FTE $3,178
Capital Equipment			
	$0	$0	$0
Office of Inspections	42.0 FTE $2,937	41.0 FTE $3,046	41.0 FTE $3,178

1799

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
INSPECTOR GENERAL
(dollars in thousands)

KEY ACTIVITY SUMMARY

INSPECTOR GENERAL

I. Preface: Program Management and Support

This staff provides executive direction and policy, planning and administrative support to the OIG. It prepares, justifies and executes the budget; performs strategic and operational planning; responds to Freedom of Information Act and Privacy Act requests, and Congressional and media inquiries; performs Public Affairs and Congressional relations functions for the OIG; provides legal counsel to the IG; conducts quality assurance reviews; provides management and technical support; provides personnel services and training to the OIG through an independent personnel office; and provides ADP and other administrative support services to the OIG.

II. A. Summary Table: Program Management and Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Operating Expenses	$ 4,977	$ 5,608	$ 4,838	$ -770
Capital Equipment	0	0	0	0
Total, Program Management and Support	$ 4,977	$ 5,608	$ 4,838	$ -770

II. B. Laboratory and Facility Funding Table: Program Management and Support

All Other	$ 4,977	$ 5,608	$ 4,838	$ -770
Total, Program Management and Support	$ 4,977	$ 5,608	$ 4,838	$ -770

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Management and Support			
Operating Expenses	Funding by Object Class: Personnel Compensation $1,944 Benefits 466 Travel 68 Contractor Services 2,499 --- $4,977	Funding by Object Class: Personnel Compensation $2,011 Benefits 491 Travel 70 Contractor Services 3,036 --- $5,608	Funding by Object Class: Personnel Compensation $2,093 Benefits 517 Travel 72 Contractor Services 2,156 --- $4,838
	This level provided executive direction and policy, planning and administrative support to the OIG to support its staffing level and workload increases. It allowed funding to prepare, justify and execute the budget; respond to Freedom of Information Act and Privacy Act requests, and congressional and media inquiries; provide legal counsel to the Inspector General; conduct quality assurance reviews; perform strategic and operational planning; provide management and technical support; provide personnel services and training to the OIG through an independent personnel office; and provide ADP and other administrative support services to the OIG. ($4,977)	This level provides the same authorized staffing level for executive direction and policy, planning and administrative support to the OIG as the FY 1994 level. ($5,608)	This level provides the same authorized staffing level for executive direction and policy, planning and administrative support to the OIG as the FY 1994 and FY 1995 levels. ($4,838)
	41.0 FTE $4,977	38.0 FTE $5,608	38.0 FTE $4,838
Capital Equipment	$0	$0	$0
Program Management and Support	41.0 FTE $4,977	38.0 FTE $5,608	38.0 FTE $4,838

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENVIRONMENTAL MANAGEMENT

URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND

VOLUME 5

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1804

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Energy and Water Development Subcommittees:					
Energy Supply Research and Development	3,175.2	3,160.0	3,314.6	3,314.6	3,396.5
Uranium Supply and Enrichment Activities	135.1	135.1	73.2	73.2	42.3
UE Decontamination & Decommissioning Fund	286.3	286.3	301.3	301.3	288.8
General Science and Research Activities	1,604.5	1,604.5	984.0	984.0	1,017.5
Isotope Production and Distribution Fund	4.9	4.9	—	—	—
Atomic Energy Defense Activities:					
Weapons Activities	3,630.2	3,294.3	3,229.1	3,240.2	3,540.2
Defense Environmental Restoration & Waste Mgmt	5,170.1	6,065.0	5,092.7	5,605.0	6,008.0
Materials Support & Other Defense Programs	1,960.4	1,401.3	1,849.7	1,326.3	1,432.2
Defense Nuclear Waste Disposal	120.0	120.0	129.4	129.4	198.4
Total, Atomic Energy Defense Activities	10,880.7	10,880.6	10,300.9	10,300.9	11,178.8
Departmental Administration	289.2	304.5	281.6	281.6	317.1
Office of Inspector General	30.4	30.4	26.5	26.5	31.0
Power Marketing Administration:					
Alaska Power Administration	4.0	4.0	6.5	6.5	4.3
Bonneville Power Administration (non-add)	(50.0)	(50.0)	(147.3)	(147.3)	(-200.0)
Conservation Direct Loan Financing Account (non-add)	—	—	—	—	(26.6)
Southeastern Power Administration	29.8	29.8	22.4	22.4	19.8
Southwestern Power Administration	33.6	33.6	21.3	21.3	29.8
Western Area Power Administration	285.1	285.1	229.8	229.8	310.9
Falcon & Amistad Operating & Maintenance Fund	—	—	—	—	1.0
Colorado River Basin	—	—	—	—	-10.0
Total, Power Marketing Administrations	352.5	352.5	280.0	280.0	355.8
Federal Energy Regulatory Commission	—	—	—	—	—
Nuclear Waste Disposal Fund	260.0	260.0	392.8	392.8	—
Geothermal Resources Development Fund	-4.5	-4.5	—	—	—
Total, Appropriations Before the Energy and Water Development Subcommittees	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8

1805

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Appropriations Before the Interior and Related Agencies Subcommittees:					
Fossil Energy Research and Development	426.0	426.0	441.8	441.8	436.5
Alternative Fuels Production	-4.8	-4.8	-3.9	-3.9	-2.4
Naval Petroleum and Oil Shale Reserves	214.8	214.8	187.1	187.1	101.0
Energy Conservation	669.1	669.1	770.8	770.8	890.5
Economic Regulation Administration	13.0	13.0	12.4	12.4	10.5
Emergency Preparedness	8.9	8.9	8.2	8.2	8.2
Strategic Petroleum Reserve	206.8	206.8	243.7	243.7	212.7
Strategic Petroleum Account	—	—	-107.8	-107.8	-187.0
SPR Decommissioning Fund	—	—	—	—	100.0
Proceeds from sale of Weeks Island Oil	—	—	—	—	-100.0
Energy Information Administration	86.6	86.6	84.6	84.6	84.7
Clean Coal Technology	221.5	221.5	37.1	37.1	45.0
Total, Appropriations Before the Interior and Related Agencies Subcommittees	1,841.9	1,841.9	1,674.0	1,674.0	1,599.7
Energy and Water Development appropriations	17,014.3	17,014.3	15,954.9	15,954.9	16,627.8
Payment to States (non-add)	(2.5)	(2.5)	(2.5)	(2.5)	(2.5)
Uranium Enrichment D&D Fund Discretionary Payments	-129.8	-129.8	-133.7	-133.7	-395.0
Total, Department of Energy Appropriations	18,726.4	18,726.4	17,495.2	17,495.2	17,832.6

1806

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL STAFFING REQUEST

	FY 1994 ACTUAL USAGE	FY 95 MINUS FY 94	FY 1995 ESTIMATE	FY 96 MINUS FY 95	FY 1996 REQUEST
ENERGY and WATER SUBCOMMITTEE					
HEADQUARTERS	6,709	260	6,969	388	7,357
FIELD	10,898	504	11,402	−162	11,240
SUBCOMMITTEE TOTAL	17,607	764	18,371	226	18,597
INTERIOR SUBCOMMITTEE					
HEADQUARTERS	1,337	92	1,429	−25	1,404
FIELD	894	−45	849	−11	838
SUBCOMMITTEE TOTAL	2,231	47	2,278	−36	2,242
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

DEPARTMENT OF ENERGY FY 1996 CONGRESSIONAL STAFFING REQUEST

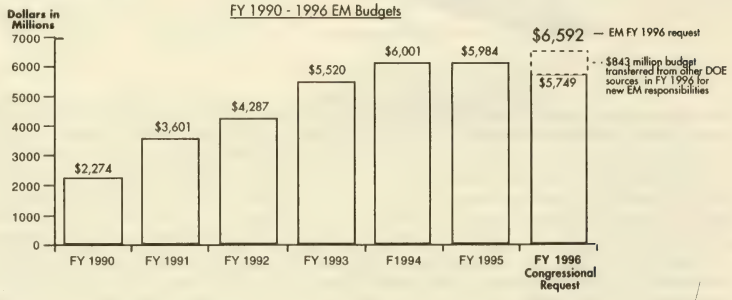
APPROPRIATION	FY 1994 USAGE	FY 1995 – FY 1994	FY 1995 ESTIMATE	FY 1996 – FY 1995	FY 1996 REQUEST
ENERGY SUPPLY R&D	1,290	35	1,325	23	1,348
HEADQUARTERS	1,118	18	1,136	23	1,159
FIELD	172	17	189	0	189
URANIUM ENRICHMENT	66	−21	45	9	54
HEADQUARTERS	33	−23	10	9	19
FIELD	33	2	35	0	35
ISOTOPE PRODUCTION & DIST	6	0	6	6	12
GENERAL SCIENCE & RESEARCH	148	−7	141	−33	108
HEADQUARTERS	87	−28	59	−3	56
FIELD	61	21	82	−30	52
WEAPONS ACTIVITIES	2,316	−144	2,172	58	2,230
HEADQUARTERS	324	−49	275	111	386
FIELD	1,992	−95	1,897	−53	1,844
ENVIRONMENTAL REST & WASTE MGT	2,067	1133	3,200	716	3,916
HEADQUARTERS	633	324	957	277	1,234
FIELD	1,434	809	2,243	439	2,682
MATERIALS SUPPORT	1,266	−99	1,167	−453	714
HEADQUARTERS	604	−57	547	−64	483
FIELD	662	−42	620	−389	231
DEPARTMENTAL ADMINISTRATION	3,034	35	3,069	−2	3,067
HEADQUARTERS	1,873	47	1,920	4	1,924
FIELD	1,161	−12	1,149	−6	1,143
INSPECTOR GENERAL	358	−2	356	0	356
ALASKA POWER ADMIN	33	2	35	0	35
BONNEVILLE POWER ADMIN	3,596	−156	3,440	−115	3,325
SOUTHEASTERN POWER ADMIN	42	−1	41	0	41
SOUTHWESTERN POWER ADMIN	198	−2	196	−1	195
WAPA – OPERATION & MAINT	1,281	−23	1,258	−6	1,252
WAPA – COLORADO RIVER BASIN	223	−14	209	−1	208
FED ENERGY REGULATORY COMM	1,434	29	1,463	−10	1,453
NUCLEAR WASTE FUND	249	−1	248	35	283
HEADQUARTERS	239	1	240	35	275
FIELD	10	−2	8	0	8
CLEAN COAL TECHNOLOGY	85	1	86	−10	76
HEADQUARTERS	22	2	24	−1	23
FIELD	63	−1	62	−9	53
FOSSIL ENERGY R&D	751	−25	726	0	726
HEADQUARTERS	151	0	151	1	152
FIELD	600	−25	575	−1	574
NAVAL PET & OIL SHALE RES	84	−8	76	0	76
HEADQUARTERS	18	1	19	0	19
FIELD	66	−9	57	0	57
ENERGY CONSERVATION	487	57	544	0	544
HEADQUARTERS	448	71	519	0	519
FIELD	39	−14	25	0	25
EMERGENCY PREPAREDNESS	65	2	67	−1	66
ECONOMIC REGULATION	135	−5	130	−20	110
STRATEGIC PETROL RESERVE	164	2	166	−1	165
HEADQUARTERS	38	−2	36	0	36
FIELD	126	4	130	−1	129
ENERGY INFORMATION ACTIVITIES	460	23	483	−4	479
ADJUSTMENT		−100	−100	100	
DOE TOTAL	19,838	711	20,549	290	20,839

1808

EXECUTIVE SUMMARY

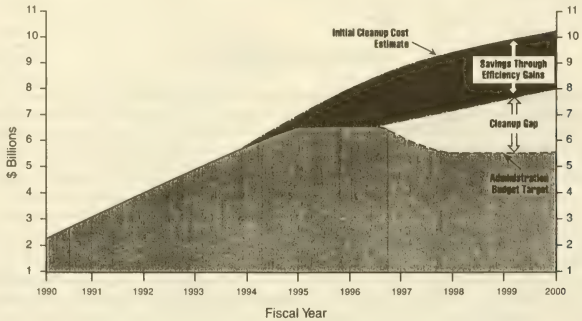
Environmental Management FY 1996 Budget Request

The FY 1996 Environmental Management budget request is $6.592 billion. This request supports a variety of activities in addition to environmental restoration (i.e., clean up) such as waste management functions, technology development efforts, plutonium stabilization, nuclear facilities management, nuclear non-proliferation support, and various other required Environmental Management efforts. In addition to growing commitments beyond the cleanup mission, EM continues to receive additional DOE sites transferred from other Departmental programs. Through FY 1995 these sites included Richland, Idaho, Fernald, and Rocky Flats. Beginning in FY 1996, EM will also be responsible for the management of the Savannah River, Mound, and Pinellas sites. Although environmental responsibilities continue to grow, real budget growth has stopped. In fact, the EM FY 1996 budget request represents the first real decline in a budget request over the previous year given a comparable work scope. Considering the current outyear budget targets, EM must grapple with long-term strategies to address projected decreasing outyear budgets; EM must also deal with the escalating cost estimates of meeting legal commitments and additional work as the Department downsizes its production facilities and transfers the surplus facilities to EM. The fiscal pressure to hold down discretionary Federal spending points to a budgetary "train wreck" with projected costs exceeding projected budgetary resources. EM is advocating the need for a serious national debate on the framework of the EM program. This debate must include stakeholder views on the fundamental aspects of the program. Issues to be discussed include the regulatory framework, total cost of meeting legal commitments, analysis of risk across the complex, and the pace and scope of the environmental restoration program.



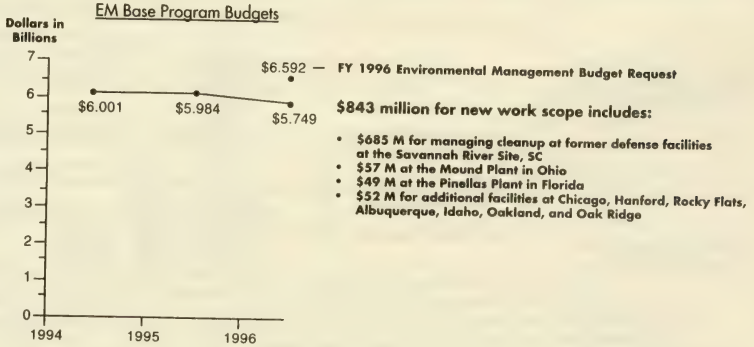
Reinventing Environmental Management to Close the Cleanup Gap

The outyear funding profile for the Environmental Management program assumes decreasing budgets for departmental environmental activities. These planned overall budget reductions dictate that the EM program actively and openly rethink how it gets its work done. This process has already begun and EM is taking aggressive steps to realize large productivity improvements and cost reductions throughout the program. In FY 1996, savings through efficency gains will account for a $1.3 billion down payment on meeting the lower outyear budget targets and closing the "cleanup gap". The new Environmental Management strategy requires greater flexibility at the site level to direct resources to the activities that reduce threats to worker and public health and safety and imminent harm to the environment. Site managers will be able to engage the State governments, regulators, and public stakeholders in good faith negotiations to maximize risk reduction per dollar spent. This consensus prioritization process will allow DOE to meet its compliance obligations while making funding trade-offs among competing site activites. Funding flexibility and prioritized site budgets will help EM accommodate the coming fiscal challenge. EM will propose that this process be tested on a pilot basis in FY 1996 at the Rocky Flats Office. This proposal will be discussed in more detail during the Congressional review cycle. An annual process that distributes funding to meet priorities driven by threats to worker health and safety, imminent harm to the environment, critical compliance milestones, and allows renegotiating unfunded milestones provides an intelligent model for meeting Environmental Management program goals and commitments will be implemented.



Trends in the EM Budget — New Missions for FY 1996 versus FY 1995

In FY 1996, the EM program is taking over the management of many facilities which were formerly the responsibility of Defense Programs and other departmental programs. The EM program will assume site management responsibilities in FY 1996 at the Savannah River Site in South Carolina, the Mound Plant in Ohio and the Pinellas Plant in Florida. Although the FY 1996 EM budget request of $6.592 billion is $608 million greater than the FY 1995 EM appropriation, the budget request in FY 1996 is dropping in relation to the expanding work scope for EM. Included in the FY 1996 request of $6.592 billion is a $843 million intra-departmental target transfer of budget for the facilities formerly managed by other departmental programs. Net of transfers for managing new facilities, the comparable EM FY 1996 base budget request of $5.749 billion, is a 4% reduction from the FY 1995 appropriation of $5,984 billion.



1811

EM is Much More Than Cleanup

From FY 1990 to FY 1994, the EM budget increased at the pace necessary to meet the growing costs for shutting down production and beginning the massive cleanup job. The subsequent three fiscal years, FY 1994-1996 (including the FY 1996 request), show a nominal increase of 7%. However, that increment is largely due to additional facilities taken on by EM after being declared surplus by other departmental programs, primarily from Defense Programs, and increasing the Government's contribution to the Uranium Enrichment D&D Fund. The leveling off of Environmental Management budget growth has not resulted in a concomitant leveling off of EM commitments. EM activities include much more than just cleanup. The EM program also has responsibility for maintaining a significant portion of the DOE complex.

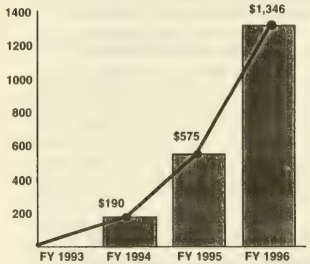
	FY 1996 Budget Request (Millions)
1. Ongoing regulatory compliance requirements and activities to bring the complex "up to code" with environment, safety and health statutes[1] 2. Support of nation's non-proliferation goals through receipt and management of foreign research reactor spent fuel. 3. Stabilizing and safeguarding plutonium - enough scraps and residues for thousands of warheads - includes stabilizing plutonium in forms or locations posing possible threats to workers or the public.	Waste Management - $2,716 (See Waste Management Overview)
4. "Landlord" responsibilities at the largest DOE sites - includes management of these "small cities" - power, water roads, health, fire and radiation protection programs and over 7000 buildings which require stabilization and deactivation, and continuous surveillance and maintenance. 5. Security for fissile materials and production facilities at EM sites (Idaho, Savannah River and Hanford Sites take up 1775 square miles).	Nuclear Materials and Facilities Stabilization- $1,680 (See Facility Transition Overview)
6. Cleanup - which includes remedial action and decontamination/decommissioning of DOE facilities and identifying and reducing risks associated with contaminated soils, groundwater,surface water, air and buildings at DOE and designated non-government facilities.	Environmental Restoration- $1,644 (See Environmental Restoration Overview)
7. Technology Development activities to find better methods for cleanup and waste management functions which will reduce the cost of cleanup in the future and improve U.S. economic competitiveness. In FY 1994, 24 technologies were made available for use and transfer to the private sector.	Technology Development- $390 (See Technology Development Overview)

[1]*Includes construction of huge facilities for waste treatment and disposal (i.e., Waste Isolation Pilot Plant, Defense Waste Processing Facility)*

1812

Productivity Gains in FY 1996 for the Environmental Management Program

EM is making a concerted effort to realize efficiency savings throughout the program to reduce current program budget requirements and achieve major long-term cost reductions. For FY 1994, FY 1995 and FY 1996, the EM program implemented an aggressive management initiative to reduce the budget request. Through a combination of project management cost savings, contractor personnel reductions, efficiency improvement bids from each field site based on additional Federal personnel allocated, reduced overhead/indirect costs, and decreased support service contracting, the EM program will achieve over $2.1 billion in budget savings from FY 1994 - FY 1996.



EM Program Efficiency Gains

Savings: ($ in Millions)	FY 1994	FY 1995	FY 1996
Productivity Savings	—	$300	$613
Use of Prior Year Balances	$190	$257	$300
Contractor Employment Reductions	—	—	$433
Procurement Reform	—	$18	—
Total Annual Savings	$190	$575	$1,346
		Cumulative Savings =	$2,111

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The Environmental Management program is demanding aggressive productivity gains throughout the DOE complex by insisting on greater managerial controls, improved program efficiencies, and reductions in contractor personnel. The productivity improvements will be realized without reductions in planned work scope at the sites. These cost saving goals need to be reached for EM to meet its legal commitments and programmatic responsibilities under current planned outyear funding targets that continue to decrease. The $6.592 billion budget request in FY 1996 assumes the achievement of savings through:

- $613 million in productivity savings;
- $433 million in contractor employment reductions;
- $300 million by utilizing prior year uncosted balances.

FY 1996 Savings

Program	Productivity Savings	Contractor Reductions	Use of Prior Year Balances*
Waste Management	$293	$207	
Environmental Restoration	218	104	
Nuclear Materials and Facilities Stabilization	95	119	
Technology Development	0	0	
Compliance and Program Coordination	0	1	
Analysis, Education, and Risk Management	7	0	
Transportation Management	0	2	
Total Environmental Management	**$613**	**$433**	**$300**

($ in millions)

* Prior year balances to be allocated by program later in the budget process.

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Contractor Reductions — Right-sizing the DOE Complex

The planned FY 1996 budget and associated outyear targets require EM to reengineer how it does business. When the Department emphasis shifted from defense production, many of the sites built up the capability to meet the new environmental cleanup mission. However, this ramp-up was done largely without taking defense production personnel off the rolls. This layering resulted in sites operating with a large number of contractor personnel not having the necessary skills to contribute to the site cleanup and restoration work. Declining budgets across the Federal government require paring out major inefficiencies such as inappropriate personnel skill mixes. EM is rethinking how it does business by "right-sizing" the contractor workforce across the DOE complex. The Department intends to achieve the reductions primarily through attrition and early out incentives. In FY 1996, up to $200 million will be internally redirected within the EM programs to cover work force restructuring activities and retraining requirements. In proceeding with workplace restructuring EM is committed to meet its obligation under National Defense Authorization Act (NDAA) Section 3161 to offer retraining and hiring preference for the affected contractor force as well as, where appropriate, severance pay for early outs. In this, EM is abiding by newly developed DOE policy in which hiring preference flows down to the subcontractor. This effort will free up significant resources for the program to apply to the Environmental Management mission. In FY 1996, the $433 million reduction in contractor expenses is the first big down payment on future changes.

Productivity Improvements

The EM program is committed to achieving $613 million in productivity savings in FY 1996. This is in addition to $300 million in productivity savings achieved in FY 1995. The bulk of these savings is based upon commitments made by individual sites to achieve improved program performance through the allocation of additional Federal employees. Savings expected through the increase in full time equivalent's are: (1) reducing indirect costs, (2) increasing efficiency through better project management, and (3) reducing contractor employees and related costs as a result of improved Federal management. In the FY 1994/FY 1995 timeframe more than 1,000 additional EM employees are being hired through an EM pilot program. An additional 400 employees will be hired in FY 1996 to complete the three year effort to improve performance and contractor oversight.

Reducing Uncosted Balances

Uncosted balance growth in the EM program results from time-consuming procurement regulations and delays associated with the need to acquire specialized capital equipment. The vast majority of EM uncosted balances are encumbered (i.e., obligated under contract, subcontract, or purchase order) or associated with approved work scope. EM continues to analyze its uncosted balances, improve funds management, and reduce carryover of uncosted balances. EM believes there is room for a proposed offset to FY 1996 budget requirements of $300 million through the use of FY 1995 estimated uncosted balances in FY 1996.

1815

Integrated Site Pilot — Rocky Flats Office

In FY 1996, the Environmental Management program will propose a management and budgeting pilot initiative at the Rocky Flats Office which will provide for Environmental Management funds to be appropriated specifically for activities at the Rocky Flats site rather than in the traditional categories of corrective activities, environmental restoration, waste management, technology development, etc. The balance of the EM budget will remain in the traditional program budget categories. EM will discuss this proposal during the FY 1996 budget reviews with cognizant Congressional committees. Adjustments will be made to the traditional EM program budgets prior to the start of FY 1996 after Congressional approval of this concept.

Under Environmental Management's current budgeting structure, the management focus is on the type of program activity being conducted, rather than on the site where work is being performed. This has resulted in a situation where individual program budgets have been the major focus, rather than achieving an optimum balance among priorities at particular sites. The current budgeting process has also resulted in a situation where the site manager has little flexibility to reallocate funds provided to the site to achieve economies and efficiencies or to address emerging requirements since any proposal to shift funds from one budget category to another requires a formal reprogramming proposal.

A budget focused by site rather than by category of work would have the advantage of allowing the site manager additional flexibility to engage the state governments, regulators, and the Site Specific Advisory Boards in good faith discussions that determine cleanup priorities from a comprehensive perspective at the respective sites. Such discussions would be premised on achieving the greatest risk prevention and risk reduction per dollar spent and would foster an improved opportunity for cooperation of all interested parties by giving them a greater stake in seeing the program succeed.

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FY 1996 Congressional Request Summary Tables

The Environmental Management FY 1996 Request by Program

The EM program budget request is funded under three appropriation accounts — the Energy Supply, Research, and Development (Energy Supply R&D, or Non-Defense) account, the Defense Environmental Restoration and Waste Management (Defense) account, and the Uranium Enrichment Decontamination and Decommissioning (D&D) Fund account.

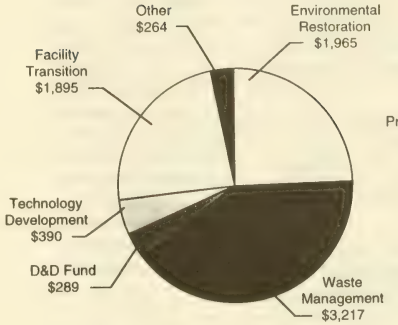
(Dollars in Thousands)

	Defense	Energy Supply R&D	D&D Fund	Total	Percent of FY 1996 Total
Waste Mgmt/ Corrective Act.	2,505,002	211,549		**2,716,551**	37%
Environmental Restoration	1,575,973	417,758		**1,993,731**	27%
Nuclear Materials & Facilities Stabilization	1,596,028	83,683		**1,679,711**	23%
Technology Development	390,510	0		**390,510**	5.3%
Uranium Enrichment D&D	0	0	288,807*	**288,807**	3.9%
Analysis, Education and Risk	157,022	0		**157,022**	2.1%
Compliance & Program Coord.	81,251	0		**81,251**	1.1%
Transportation Management	16,158	0		**16,158**	0.2%
Subtotal	6,321,944	712,990	288,807	**7,323,741**	
Use of Prior Year Balances	(276,942)	(23,058)	0	**(300,000)**	
Savannah River Pension Funds	(37,000)	0	0	**(37,000)**	
D&D Fund Deposit Offset	0	0	(350,000)	**(350,000)**	
D&D Fund Foreign Fee	0	0	(45,000)	**(45,000)**	
Total	6,008,002	689,932	(106,193)	**6,591,741**	

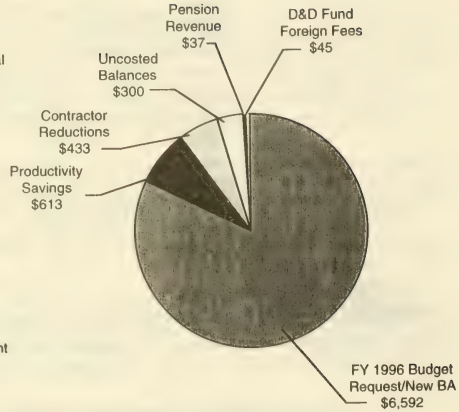
* This request amount is offset by the Government Contibution to the Uranium Enrichment D&D Fund which is requested in the Environmental Restoration Program Defense Account.

Environmental Management
FY 1996 Budget Request

(Dollars in Millions)



FY 1996 Program Scope
Requirements:
$8,020



How EM Plans to Satisfy
These Requirements

Environmental Management Budget by Program

(Dollars in Thousands)

	FY 1990 Appropriation Total	FY 1991 Appropriation Total	FY 1992 Appropriation Total	FY 1993 Appropriation Total	FY 1994 Appropriation Total	FY 1995 Appropriation Total	FY 1996 Congressional Request Total	Percent of FY 1996 Total
Waste Management	1,303,053	2,042,249	2,464,437	3,339,441	3,003,006	2,916,063	**2,707,741**	37%
Environmental Restoration	656,829	1,102,422	1,379,989	1,852,268	1,819,604	1,768,521	**1,993,731**	27%
Nuclear Materials & Facilities Stabilization	0	0	0	17,861	679,541	838,853	**1,679,711**	23%
Technology Development	183,481	235,960	303,442	382,200	393,797	417,359	**390,510**	5.3%
Uranium Enrichment D&D	0	0	0	0	287,325	301,327	**288,807**	3.9%
Analysis, Education, & Risk Mgmt.	13,840	32,306	24,749	50,800	91,896	84,948	**157,022**	2.1%
Corrective Activities	104,793	188,298	120,574	61,317	26,418	27,212	**8,810**	0.1%
Transportation Management	12,140	15,191	18,870	19,700	19,543	20,684	**16,158**	0.2%
Compliance & Program Coord.	0	0	0	0	0	0	**81,251**	1.1%
Subtotal	2,274,136	3,616,426	4,312,061	5,703,587	6,321,130	6,374,967	**7,323,741**	
Use of Prior Year Balances	0	(15,409)	(25,162)	(183,260)	(190,308)	(257,481)	**(300,000)**	
SR Pension Funds	0	0	0	0	0	0	**(37,000)**	
D&D Fund Deposit Offsets	0	0	0	0	(129,805)	(133,700)	**(350,000)**	
D&D Fund Foreign Fee	0	0	0	0	0	0	**(45,000)**	
Total	2,274,136	3,601,017	4,286,899	5,520,327	6,001,017	5,983,786	**6,591,741**	

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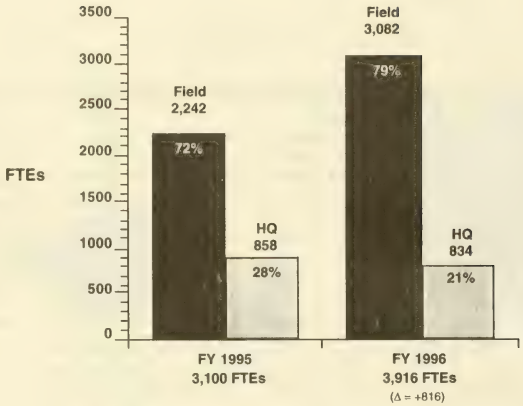
Environmental Management Federal FTEs

Headquarters vs Field



EM is strengthening contractor oversight in the Field.

Environmental Management Federal FTEs

Summary of Changes (FY1995 to FY1996)	Headquarters	Field	Totals
FY 1995 Allocation	858	2,242	**3,100**
EM Pilot Program*	–	+400	**+400**
Savannah River Transfer From Defense Programs	–	+372	**+372**
Mound Transfer From Defense Programs	–	+39	**+39**
Other EM/Department Adjustments	-24	+29	**+5**
	834	3,082	**3,916**

* *Completes the effort to hire 1,600 FTEs over the 1994 – 1996 timeframe to strengthen contractor oversight.*

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Energy Supply Research and Development

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DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENVIRONMENTAL MANAGEMENT

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Energy Supply Research and Development					
Solar Energy	242.3	242.3	292.2	292.2	326.4
Geothermal	23.0	23.0	37.8	37.8	37.0
Hydrogen Research	9.6	9.6	9.6	9.6	7.3
Hydropower	1.0	1.0	4.9	4.9	1.0
Electric Energy Systems	37.0	37.0	38.5	38.5	41.0
Energy Storage Systems	7.2	7.2	5.8	5.8	5.9
Policy and Management - CE	3.8	3.8	4.8	4.8	4.7
Nuclear Energy R&D	227.3	227.3	199.2	199.2	201.1
Termination Cost	104.7	104.7	69.7	69.7	72.6
Isotope Support	—	—	19.5	19.5	25.4
Soviet Designed Reactor Safety	30.0	30.0	—	—	78.8
Russian Replacement Power Initiative	—	—	—	—	5.0
Civilian Waste R&D	0.7	0.7	0.7	0.7	0.7
Environment, Safety and Health					
Environment Research and Development	141.1	141.1	126.7	126.7	149.6
Nuclear Safety Policy	14.7	14.7	17.2	17.2	17.2
Environmental Analysis	9.6	—	—	—	—
Scientific & Engineering Recruitment, Training & Dev.	4.9	—	—	—	—
Total, Environment, Safety and Health	170.3	155.8	143.9	143.9	166.8
Biological and Environmental Research	395.2	395.2	436.7	436.7	431.7
Fusion Energy	328.6	328.6	368.4	368.4	366.0
Basic Energy Sciences	757.8	757.8	733.9	733.9	811.4
Advanced Neutron Source	16.2	16.2	20.8	20.8	—
Energy Research Analyses	3.6	3.6	3.4	3.4	3.5
Laboratory Technology Transfer	37.4	37.4	56.9	56.9	58.8
Advisory and Oversight	13.4	12.7	12.5	12.5	9.8
Multi-Program Energy Laboratories	40.1	40.1	43.0	43.0	51.0
Policy and Management - ER	3.1	3.1	2.2	2.2	2.2
Small Business Innovation Research (SBIR)	54.0	54.0	—	—	—
University and Science Education Programs	55.3	55.3	69.6	69.6	55.4
Technical Information Management Program	14.7	14.7	16.1	16.1	17.4
Technology Partnership	—	—	—	—	3.1
In-House Energy Management	25.3	25.3	30.7	30.7	28.8
Liquified Gaseous Spill Test Facility	1.3	1.3	—	—	—
Environmental Rest. & Waste Mgmt. (non-defense)	693.0	693.0	731.7	731.7	713.0
Subtotal, Energy Supply Research and Development	3,295.9	3,280.7	3,352.5	3,352.5	3,525.8
Prior Year Balances & Other Adjustments	-120.7	-120.7	-37.9	-37.9	-129.3
Total, Energy Supply Research and Development	3,175.2	3,160.0	3,314.6	3,314.6	3,396.5

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Energy Supply, Research and Development Activities

For expenses of the Department of Energy activities including the purchase, construction and acquisition of plant and capital equipment and other expenses incidental thereto necessary for energy supply, research and development activities, and other activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; purchase of passenger motor vehicles (not to exceed 25, of which 19 are for replacement only), [$3,314,548,000] $3,506,035,000, to remain available until expended[: *Provided*, That the Secretary of Energy may transfer available amounts appropriated for use by the Department of Energy under title III of previously enacted Energy and Water Development Appropriations Acts into the Isotope Production and Distribution Program Fund, in order to continue isotope production and distribution activities; *Provided further*, That the authority to use these amounts appropriated is effective from the date of enactment of this Act: *Provided further*, That fees set by the Secretary for the sale of isotopes and related services shall hereafter be determined without regard to the provisions of Energy and Water Development Appropriations Act (Public Law 101-101): *Provided further*, That amounts provided for isotope production and distribution in previous Energy and Water Development Appropriations Acts shall be treated as direct appropriations and shall be merged with funds appropriated under this head.]: *Provided*, That the amount appropriated herein reflects anticipated savings of $50,000,000 associated with implementing the recommendations of the Task Force on Alternative Futures for the Department of Energy National Laboratories: *Provided further*, That in the event some portion of savings are achieved in other accounts under this title, amounts equal to such savings may be transferred to this account without regard to the requirements or limitations of section 302 of Public Law 102-377.

EXPLANATION OF CHANGE

The proposed deletion is to eliminate the one-time provisions for Isotopes Production activities. The proposed language authorizes transfer of anticipated saving among title III accounts.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
OVERVIEW
ENVIRONMENTAL MANAGEMENT

The Environmental Management (EM) program is responsible for identifying and reducing risks and managing waste at sites where the Department carried out nuclear energy or weapons research and production activities which resulted in radioactive, hazardous, and mixed waste contamination. The number of sites and facilities in the EM program continues to grow as the Department shifts its focus from primarily production efforts to environmental management activities. The EM program is budgeted under three appropriation accounts, the Energy Supply, Research and Development account, the Defense Environmental Restoration and Waste Management account, and the Uranium Enrichment Decontamination and Decommissioning Fund account. Under this account, the EM program includes waste management functions; environmental restoration activities; nuclear material and facilities stabilization functions; and a variety of crosscutting initiatives, including major emphasis on public participation.

When the EM program was established in late 1989, it inherited a legacy with significant environmental and political challenges. The 137 environmental management sites in 34 States have different functions, geographies, and degrees and types of contamination. These sites include contaminated surface water or groundwater, soil, and structures totalling over 3,300 square miles of contaminated area. No other nation, government, or private entity has attempted a program of this scope and magnitude before.

The EM program must meet a significant number of legal requirements which result from 103 Departmental compliance agreements and many environmental regulations. Bridging the gap between requirements in existing agreements and resources will be a challenge requiring increased cost savings through better project performance and cost containment. The program's main challenge is to develop a strategy within existing and projected technical and financial constraints that enable the Department to meet its commitments to the American people.

To meet this challenge, the EM program has identified six main goals:

- Eliminate and manage the urgent risk in the system;
- Emphasize health and safety for our workers and the public;
- Establish a system that increases managerial and financial control;
- Demonstrate tangible results;
- Focus technology development efforts on identifying and overcoming obstacles to progress; and
- Establish a stronger partnership between the Department of Energy and its stakeholders.

To help achieve these goals, the EM program has made a commitment to performance measurement and to meeting the requirements of the Government Performance and Results Act of 1993. In response to this Act and in keeping with efforts to improve management practices, the Secretary of Energy has directed the Department to expeditiously adopt performance-based budgeting. The intent of performance-based budgeting is to show a direct relationship between program dollars (resources) expended and results achieved. The EM program will continue to build on these efforts and focus resources on meeting its goals.

FY 1996 Budget Request

The FY 1996 budget request under the Energy Supply, Research and Development account is $713 million, a decrease of $17 million from FY 1995. The Lead Table displays the request by program activity: Corrective Activities, Environmental Restoration, Waste Management, and Nuclear Material and Facilities Stabilization.

Contractor Reductions

The FY 1996 funding levels assume significant contractor reductions in the FY 1995/FY 1996 timeframe. These reductions, where possible, will be completed during FY 1995 in order to achieve the savings necessary ($33.7 million) to remain within the FY 1996 budget and outyear targets.

Productivity Savings

The EM program has implemented an aggressive management initiative to reduce the cost of doing business. In addition to contractor reduction savings, a combination of project management cost savings, efficiency gains through increased Federal personnel in the field, reduced overhead/indirect costs, and decreases in the use of support service contracts, should save EM approximately $8.5 million in FY 1996. These savings have been factored into the FY 1996 budget request.

New Missions

The FY 1996 request includes $16.7 million for activities previously managed and budgeted for by other Departmental elements. Facilities at Idaho, Oakland, Oak Ridge, and Richland are included in the budget to provide safe stewardship and support transition activities.

The FY 1996 budget request under the Energy Supply, Research and Development account includes the following program activities:

- Corrective Activities are efforts designed to bring active and standby facilities into compliance with applicable local, State, and Federal regulations. About two dozen non-defense projects were identified in the 1989/1990 timeframe that were needed to bring EM facilities into compliance with regulatory requirements. The major regulatory drivers were the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act, and the Toxic Substances Control Act. In FY 1996, only two construction projects still require funding--both to upgrade liquid low-level radioactive waste collection and transfer lines at the Oak Ridge National Laboratory. All other non-defense Corrective Activities have been successfully completed.

- Environmental Restoration program activities include the assessment, characterization, and remediation efforts at a large number of surplus facilities and inactive sites across the country. The objectives of the Environmental Restoration program are to stabilize radioactive waste or perform decontamination and decommissioning at contaminated DOE and legislatively-authorized non-government facilities and sites; to conduct assessments and characterization of DOE sites to determine if there is the potential for radioactive and hazardous waste releases; and to protect human health and the environment. Included are the following efforts:

  - Facilities and Sites activity which includes characterization, remediation and closure activities to reduce and remove the potential risks to the environment and to human health and safety resulting from past non-defense related Departmental activities.

  - Formerly Utilized Sites Remedial Action Project (FUSRAP) which currently includes 46 sites, 41 former Manhattan Engineering District/Atomic Energy Commission (MED/AEC) sites and 5 sites added by Congress. Remedial action has been completed at 14 of the 46 sites included under this project.

  - Uranium Mill Tailings Remedial Action Project (UMTRAP) which includes 24 inactive uranium mill tailings sites and approximately 5,000 associated vicinity properties. Remedial action has been completed at 14 of the 24 sites included under this project.

  - Uranium Mill Tailings Remedial Action Groundwater Project which will restore, as necessary, the groundwater of 24 designated uranium mill tailings sites.

- Waste Management program activities are focused on safely and effectively managing the minimization, characterization, packaging, transportation, treatment, storage, and disposal of radioactive, hazardous, mixed, and sanitary wastes generated by past and ongoing operations at DOE facilities. These fundamental functions are necessary to safely and effectively manage waste resulting from the operations of the Department's Offices of Energy Research and Nuclear Energy. These offices operate a large complex of research, development and testing installations across the country. Operations connected with this complex include various basic and applied research activities as well as nuclear energy development and applications. These operations routinely generate various amounts and types of radioactive, hazardous, mixed waste products, and sanitary waste which require treatment, storage and disposal. Other activities performed by the Waste Management program are the operation and management of RCRA and TSCA permitted facilities to meet program and regulatory requirements, the West Valley Demonstration Project, and the National Low-Level Waste Program. FY 1996 is a crucial year in which the program will address liquid high-level radioactive waste management through the startup of the West Valley Demonstration Project. The solidification campaign is expected to take two years, at which time the solid waste will be temporarily stored pending ultimate disposal. The FY 1996 request also includes funding for some of the expected activities that will be required by the Federal Facilities Compliance Act of 1992. This legislation will have far-reaching implications for the Department of Energy since it waives sovereign immunity for fines and penalties for violations of RCRA. It delays that waiver for certain violations related to mixed waste, but requires the Department to develop site specific plans for developing capacity to treat its mixed waste that will be approved and enforced by the States or the Environmental Protection Agency. By FY 1996, individual site treatment plans will have been submitted to the States. Compliance agreements, where needed, will also be ready for implementation.

- Nuclear Materials and Facilities Stabilization (formerly entitled Facility Transition and Management) coordinates and oversees the orderly transfer of surplus contaminated installations, facilities, and materials to EM. This program plays a significant role in developing and implementing the policy and procedures for acceptance and disposition of these facilities. During deactivation, this program emphasizes driving outyear surveillance and maintenance mortgages down without compromising worker and public health and safety. These efforts are being accomplished while placing high priority on minimizing workforce impacts, maximizing stakeholder involvement, and minimizing economic impacts to local communities. In FY 1996, support will continue for Richland's Fast Flux Test Facility Shutdown project. This five-year construction project supports the deactivation of the facility by providing a storage and reaction facility to support the safe disposition of reactor fuel and hazardous liquid coolant. Other deactivation activities include the deactivation and stabilization of Nuclear Energy Legacy facilities, planning auxiliary system shutdown, and initiation of fuel washing and dry cask storage. Deactivation activities of 19 isotope facilities will continue including cleanup of hot cells and other contaminated areas at the Oak Ridge National Laboratory. Funding for Departmental high ranking contaminated surplus facilities is also included in the FY 1996 request.

The individual budget submissions provide detailed information for each of the program areas and identify the various sites where EM is conducting its activities. The level of workscope described in the four EM budget submissions totals $755.2 million. In the Energy Supply, Research and Development appropriation, EM is requesting $713 million, after an adjustment of $42.2 million for productivity and contractor reduction savings. Approximately 58 percent of the FY 1996 budget request is needed to perform remediation activities, 30 percent for waste management/corrective activities, and 12 percent for nuclear materials and facilities stabilization efforts.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

LEAD TABLE

Environmental Management

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Corrective Activities					
Operating Expenses	$1,087	$600	$0	$600	$1,065
Capital Equipment	0	0	0	0	0
Construction	18,129	26,100	0	26,100	4,339
Subtotal	19,216	26,700	0	26,700	5,404
Environmental Restoration					
Operating Expenses	365,157	395,165	(6,568)	388,597	417,758
Capital Equipment	0	0	0	0	0
Construction	0	0	0	0	0
Subtotal	365,157	395,165	(6,568)	388,597	417,758
Waste Management					
Operating Expenses	200,626	213,067	(4,225)	208,842	196,469
Capital Equipment	2,626	2,191	(360)	1,831	1,658
Construction	36,130	32,343	0	32,343	8,018
Subtotal	239,382	247,601	(4,585)	243,016	206,145
Nuclear Materials and Facilities Stabilization					
Operating Expenses	$69,003	$74,225	($1,239)	$72,986	$83,483
Capital Equipment	194	350	0	350	200
Construction	0	0	0	0	0
Subtotal	69,197	74,575	(1,239)	73,336	83,683
Totals					
Operating Expenses	$635,873	$683,057	($12,032)	$671,025	$698,775
Capital Equipment	2,820	2,541	(360)	2,181	1,858
Construction	54,259	58,443	0	58,443	12,357
Subtotal	$692,952	$744,041	($12,392)	$731,649	$712,990
ESR&D General Reduction	0	(12,392)	12,392	0	0
Use of Prior Year Balances (Offset)	(19,520)	(8,181)	0	(8,181)	(23,058)
TOTAL, EM	$673,432	$723,468	$0	$723,468	$689,932

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
ENERGY, SUPPLY RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MANAGEMENT
(dollars in thousands)

SUMMARY OF CHANGES

FY 1995 Appropriation	$723,468
Adjustment	0
FY 1995 Adjusted	$723,468
- Net program changes (detailed summary of changes are described in the four individual program budgets)	-10,478
FY 1996 Congressional Budget Request	$712,990
Use of Prior Year Balances (Offset)	-23,058
FY 1996 New Budget Authority Required	$689,932

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

CORRECTIVE ACTIVITIES (NON-DEFENSE)

This program brings active and standby facilities at non-defense DOE sites into compliance with all applicable air, water, and solid waste regulatory requirements, negotiated agreements, and other regulatory requirements. The baseline of non-compliant facilities, established in 1989, consists of about 170 distinct projects, of which about two dozen are non-defense related facilities. The primary regulations governing these activities are the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, Safe Drinking Water Act, Toxic Substances Control Act, and State and local ordinances. Once the facility is brought into compliance, the Corrective Activity is complete, and the funding responsibility for maintaining compliance shifts to the Office of Energy Research, Office of Nuclear Energy, or Office of Environmental Management base program that "owns" the facility.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Corrective Activities (Non-Defense)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Solid Waste Regulations					
Operating Expenses	$ 967	$ 600	$ 0	$ 600	$ 1,065
Construction	17,469	26,100	0	26,100	4,339
Subtotal, Solid Waste Regulations	$ 18,436	$ 26,700	$ 0	$ 26,700	$ 5,404
Water Regulations					
Operating Expenses	$ 120	$ 0	$ 0	$ 0	$ 0
Construction	660	0	0	0	0
Subtotal, Water Regulations	$ 780	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 19,216	$ 26,700	$ 0	$ 26,700	$ 5,404
Summary					
Operating Expenses	$ 1,087	$ 600	$ 0	$ 600	$ 1,065
Construction	18,129	26,100	0	26,100	4,339
Total Program	$ 19,216	$ 26,700	$ 0	$ 26,700	$ 5,404
Staffing (FTEs)	0	0	0	0	0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Corrective Activities (Non-Defense)

FY 1995 Appropriation	$ 26,700
- Adjustment -	0
FY 1995 Adjusted	$ 26,700
- Transfer -	0
FY 1995 Comparable	$ 26,700
Solid Waste Regulations	
- Solid Waste Regulations - Decrease reflects completion of construction of Melton Valley Low-Level Waste Collection and Transfer System at Oak Ridge National Laboratory	-21,296
FY 1996 CONGRESSIONAL Budget Request	$ 5,404

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Corrective Activities (Non-Defense)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 780	$ 0	$ 0	$ 0	$ 0
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 18,436	$ 26,700	$ 0	$ 26,700	$ 5,404
TOTAL	$ 19,216	$ 26,700	$ 0	$ 26,700	$ 5,404

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CORRECTIVE ACTIVITIES (NON-DEFENSE)

I. Preface: Solid Waste Regulations

Funds provided under this budget category address corrective activities necessary to bring out-of-compliance non-defense facilities into compliance with RCRA, TSCA, provisions of the Hazardous and Solid Waste Amendments, State and Local Ordinances, and DOE Orders. The construction projects described here will upgrade a portion of the existing Bethel Valley Liquid Low-Level Waste (LLLW) collection and transfer (CAT) system at Oak Ridge National Laboratory (ORNL) with the best available technology for satisfying regulatory requirements and support completion of Melton Valley construction project.

II. A. Summary Table: Solid Waste Regulations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Solid Waste Regulations	$ 18,436	$ 26,700	$ 5,404	$ -21,296
Total, Solid Waste Regulations	$ 18,436	$ 26,700	$ 5,404	$ -21,296

II. B. Laboratory and Facility Funding Table: Solid Waste Regulations

Oak Ridge National Lab	18,436	26,700	5,404	-21,296
Total, Solid Waste Regulations	$ 18,436	$ 26,700	$ 5,404	$ -21,296

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solid Waste Regulations	OAK RIDGE NATIONAL LABORATORY (ORNL)	OAK RIDGE NATIONAL LABORATORY (ORNL)	OAK RIDGE NATIONAL LABORATORY (ORNL)
	Completed Title I and Title II design and continued long-lead procurement and construction for the Melton Valley LLLW-CAT system upgrade project at ORNL. ($467)	Provide support for design, construction, and operational reviews for the Melton Valley LLLW CAT system upgrade project, in accordance with DOE Order 4700.1. ($100)	Will complete construction of the Melton Valley LLW-CAT system upgrade project. Will work on System Safety Analysis and Operational Procedures. ($500)
	Completed design and construction on most Phase I activities and continued long-lead procurement phases of the Bethel Valley Liquid Low-Level Waste System Upgrade project. ($500)	Continue program management and construction of the Bethel Valley Liquid Low-Level Waste System Upgrade project. Submit design assessment for Phase II activities to EPA and the state. ($500)	Will continue program management and construction of the Bethel Valley Liquid Low-Level Waste System Upgrade project. ($565)
	CONSTRUCTION	CONSTRUCTION	CONSTRUCTION
	The Solid Waste budget provides for construction to support the activities described above. ($17,469)	The Solid Waste budget provides for construction to support the activities described above. ($26,100)	The Solid Waste budget provides for construction to support the activities described above. ($4,339)
	$18,436	$26,700	$5,404
Solid Waste Regulations	$18,436	$26,700	$5,404

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CORRECTIVE ACTIVITIES (NON-DEFENSE)

I. Preface: Water Regulations

This budget category reflects funding for corrective activities needed to bring active and standby facilities at non-defense DOE sites into compliance with applicable water regulatory requirements, negotiated agreements and other regulatory requirements. In FY 1996, there are no activities requiring funding.

II. A. Summary Table: Water Regulations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Water Regulations	$ 780	$ 0	$ 0	$ 0
Total, Water Regulations	$ 780	$ 0	$ 0	$ 0

II. B. Laboratory and Facility Funding Table: Water Regulations

Argonne National Lab (East)	$ 780	$ 0	$ 0	$ 0
Total, Water Regulations	$ 780	$ 0	$ 0	$ 0

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Water Regulations	ARGONNE NATIONAL LABORATORY-EAST Completed Argonne-East systems analyses conducted by DOE-CH on projects to rehabilitate existing treatment works including physical and chemical treatment to remove suspended solids, organic compounds and heavy metals of waste streams to meet the Clean Water Act requirements. ($120) CONSTRUCTION The Water Regulations budget provides for construction to support the activities described above. ($660)	ARGONNE NATIONAL LABORATORY-EAST No activity. ($0) CONSTRUCTION Complete design of wastewater treatment plant using prior year carryover. Construction delayed as a result of systems analysis study. ($0)	ARGONNE NATIONAL LABORATORY-EAST No activity. ($0) CONSTRUCTION Will initiate construction of wastewater treatment plant using prior year carryover. ($0)
	$780	$0	$0
Water Regulations	$780	$0	$0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes made from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Project Summary Listing

Corrective Activities - Non-Defense

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
92-E-601	Melton Valley LLLW Collection and Transfer System Upgrade, ORNL	$ 20,400	$ 11,161	$ 9,100	$ 339	$ 0	$41,000
90-R-119	Laboratory Wasterwater Treatment Plant Improvements, ANL	6,640	660	0	0	0	7,320
88-R-830	Bethel Valley Liquid Low-Level Waste Collection and Transfer System Upgrade, ORNL	35,000	6,308	17,000	4,000	2,692	65,000
	Subtotal, Construction Funded	$ 62,040	$ 18,129	$ 26,100	$ 4,339	$ 2,692	N/A
TOTAL, Corrective Activities - Non-Defense		$ 62,040	$ 18,129	$ 26,100	$ 4,339	$ 2,692	N/A
TOTAL NUMBER OF LINE ITEMS		(9)	(3)	(2)	(2)	(1)	

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Melton Valley Liquid Low-Level Waste, Collection and Transfer System Upgrade, Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee	2a. Project No.: 92-E-601 2b. Construction Funded

SIGNIFICANT CHANGES

o The FY 1994 Appropriation request has been adjusted due to a Congressionally mandated rescission.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-E-601, Melton Valley Liquid Low-Level Waste Collection and Transfer System Upgrade, Oak Ridge National Laboratory, Oak Ridge, Tennessee — TEC: $41,000 TPC: $42,300

Start Date: 3rd Qtr. FY 1992 — Completion Date: 4th Qtr. FY 1996

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 4,500		$ 4,500	$ 948
1993	15,900		15,900	4,673
1994	11,500	- 339 a/	11,161	6,392
1995	9,100		9,100	11,710
1996	339		339	10,490
1997	0		0	6,587

a/ Congressionally mandated rescission.

3. Narrative:

~~The project will upgrade the existing LLW collection and transfer system with technology to satisfy regulatory requirements. The project includes several thousand feet of doubly contained stainless steel pipeline with associated stainless steel collection and neutralization tankage. The pipelines will be equipped with an active leak detection system and will be cathodically protected against corrosion.~~

The project provides for design and construction of an upgrade to the portion of ORNL's liquid low-level waste collection and transfer system (LLW-CAT) serving Melton Valley. The proposed project includes several thousand feet of doubly contained (2-inch and 4-inch) pipeline with a stainless steel collection tank. The tank will have a capacity of 10,000 gallons and will be located in a underground stainless steel lined concrete vault. The tank will have provisions for flow control, and leak detection. A local monitoring and control station will be provided and integrated with the existing Waste Operations Control Center (WOCC) to provide overall system monitoring and control. An ion exchange system will be installed in Building 7900 to treat waste streams from the High Flux Isotope Reactor (HFIR) Facility to meet the process waste acceptance criteria. The resins from the ion exchange columns will be dewatered and stored in containers on a gravel pad provided by the project. An offgas filter system will be installed to replace the HOG filters in the 7913 filter pit.

The FY ~~1995~~ 1996 funding will be used ~~for procurement and~~ to complete construction.

As described for FY 1995, the start of Title I design has changed from the first quarter of FY 1992 to the third quarter of FY 1992. The start of construction has changed from the third quarter of FY 1993 to the first quarter of FY 1995. The design start change resulted from delays in completion of the design criteria and delays in awarding the task to an A-E. The construction start change is a clarification; the previous date represented the start of long-lead procurement rather than physical construction. Minor scope changes have resulted from refinement of the design.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Bethel Valley Liquid Low-Level Waste Collection and Transfer System Upgrades, Oak Ridge National Laboratory, Oak Ridge, Tennessee

2a. Project No.: 88-R-830
2b. Construction Funded

SIGNIFICANT CHANGES

- The financial schedule has been changed due to a Congressionally mandated rescission for FY 1994, and to a reprioritization of funds that affected FY 1996 and FY 1997.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 88-R-830, Bethel Valley Liquid Low-Level Waste Collection and Transfer System Upgrade, Oak Ridge National Laboratory, Oak Ridge, Tennessee

TEC: $65,000
TPC: $71,700

Start Date: 1st Qtr. FY 1988 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	35,000		35,000	31,497
1994	6,500	- 192 a/	6,308	4,827
1995	17,000		17,000	10,076
1996	4,000		4,000	13,600
1997	2,692		2,692	5,000

a/ Congressionally mandated rescission.

3. Narrative:

This project will upgrade a portion of the existing Bethel Valley liquid low-level waste collection and transfer system. The project includes approximately one mile of double contained stainless steel piping and five stainless steel tanks (to be underground in stainless steel lined concrete vaults). The pipelines will be equipped with an active leak detection and monitoring system and will be tied in with an overall operational control system. The project will also include a new (4,000 square feet) central facility for receiving and discharging to the pipeline system liquid low-level waste transported by truck in tanks and small bottles (in lieu of piping). Appropriately equipped new trucks will be provided to transport waste.

The purpose of this project is to upgrade a significant portion of the liquid low-level waste collection and transfer system to protect personnel and public safety and health and the environment and to meet all applicable regulations. The majority of the existing system was constructed in 1940's using materials and approaches considered applicable at the time. The original pipes are rapidly deteriorating and leaks are expected to occur at an increasing rate.

As described for FY 1994, the TEC of this project has increased $30,000,000 from the original estimate. The increase resulted from reinstatement of scope, implementation of rulemaking, increased regulatory rigor, implementation of a construction manager, design delays, schedule extension (the construction end date has changed from the 4th quarter FY 1991 to the 4th quarter FY 1997), complications during decontamination, cost accounting procedure changes requiring portions of decontamination and Readiness Reviews be funded by the project. Current project planning and associated documentation reflects these changes.

As described for FY 1994, procurement of a tanker truck was deleted from the project scope due to changing needs at the ORNL. Remaining in the project scope is a truck to provide bottle transportation to the TWRF from low volume waste generators at the ORNL.

FY ~~1995~~ 1996 funding will be used to continue work on Phase II including ~~advanced~~ procurement, decontamination, ~~and~~ construction activities, and Title III inspection.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

ENVIRONMENTAL RESTORATION

I. INTRODUCTION

The mission of the Environmental Restoration program is to reduce or eliminate risks to human health and the environment through assessment, remediation, and decontamination and decommissioning (D&D) of contaminated Department of Energy (DOE) sites. These sites include contaminated surface water, groundwater, soil and structures totalling over 3,300 square miles. Various amounts and types of waste have accumulated at these sites as a result of past Departmental nuclear weapons production and research activities spanning nearly five decades. The Department is committed to executing an Environmental Restoration program which 1) protects public health and safety; 2) assures a safe and clean environment; and 3) maintains compliance with the letter and spirit of applicable Federal, State, and local health, safety, and environmental statutes.

Remedial action requirements are derived primarily from the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Resuthorization Act of 1986, and the Resource Conservation and Recovery Act (RCRA) of 1976, as amended. Remedial action projects require compliance with the National Environmental Policy Act (NEPA) consistent with DOE policy on CERCLA/NEPA integration. Cleanup and reporting requirements for remediating hazardous waste sites are imposed by CERCLA. Under this act, the Department conducts Remedial Investigations and Feasibility Studies, which are usually performed together. The Remedial Investigation characterizes conditions at the site to identify the sources and extent of contamination. The Feasibility Study evaluates specific alternatives for cleaning up a site. The selected remedial action is documented in a Record of Decision (ROD). Requirements for the management of hazardous wastes are prescribed under RCRA. These guidelines regulate waste at all stages, from before it is generated until after its disposal. The act also establishes a permit program for hazardous waste storage, treatment, and disposal facilities. Permits identify the administrative and technical standards to which facilities must adhere. Lastly, NEPA provides a process for Federal agencies to identify and assess the alternatives to proposed actions to avoid or minimize the effect of these actions on the environment. Under this act, agencies must prepare an Environmental Impact Statement for all major actions that may significantly affect the environment. The act mandates agencies to make information available to Federal officials and citizens before decisions about selected alternatives are made. The selected cleanup alternative is documented in a ROD.

Environmental Restoration program activities include remediation of a large number of facilities, contaminated areas at various Department sites, inactive waste disposal sites, uncontrolled release sites, and underground storage tanks. In addition, within the non-defense appropriation account, the formerly Utilized Sites Remedial Action Project (FUSRAP) provides for remedial action at privately-owned former nuclear processing facilities that became contaminated as a result of Manhattan Engineering District (MED) or Atomic Energy Commission (AEC) work or have been specifically assigned to the Department by Congress; and the Uranium Mill Tailings Remedial Action Project (UMTRAP) provides for a mill tailings stabilization and control program at 24 sites and an estimated 5,000 associated vicinity properties. The scopes, schedules, and remediation standards for these activities are negotiated with the Environmental Protection Agency (EPA) and the States and are the subject of RCRA permits, Consent Orders and Compliance Agreements (COCAs), and CERCLA Federal Facility Agreements (FFAs). Funds requested for the Environmental Restoration program will provide for actions that must be undertaken immediately to minimize or prevent significant risk to workers, the public or the environment; activities required by current (in place or in negotiation) Federal, State, and local regulatory agreements; and support of other legal requirements and DOE Orders. The Environmental Restoration program currently manages, in both defense and non-defense appropriation accounts, remediation activities which include 320 projects at National Priorities List (NPL) sites; 80 CERCLA activities commonly referred to as Superfund projects; 97 RCRA closures; 108 RCRA corrective actions; and 169 decontamination and decommissioning projects.

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OVERVIEW - ENVIRONMENTAL RESTORATION (NON-DEFENSE) (continued):

Before actual remediation work can begin, extensive site characterization/assessments must be conducted to determine the extent of contamination and risk involved. Assessment activities include sampling and analysis, modeling, reviewing historical records of plant operations, assessing the potential risks, and studies of appropriate remedial alternatives. Generally, once site characterization activities are completed, a final remedial alternative is selected and remediation begins. At all sites where environmental management activities are conducted, interim actions are used to address urgent risks and remove potential threats prior to the completion of detailed characterization studies and the selection of a final remedial alternative for the site. Interim actions include expedited response actions, removal actions and actions to stabilize and contain waste or offsite plume migration.

In addition to providing for those basic, essential assessment and remediation activities which address urgent risks and meet compliance and legal requirements, a prudent amount of funding has been included in the FY 1996 request for D&D activities across the DOE complex to address the backlog of facilities and sites requiring remediation. Over 7,000 contaminated buildings owned by the Department are no longer needed and require expensive monitoring until they can be safely dismantled. D&D efforts include such facilities as reactors, hot cells, production facilities, laboratories, processing plants, storage tanks, and other structures which have been contaminated from past Departmental activities. Performing additional D&D will: 1) reduce the need for future surveillance and maintenance (S&M), which will ultimately lower potential adverse worker health and safety incidences and lower S&M costs; (2) yield tangible results; and (3) contribute to the overall DOE site cleanup required by the numerous compliance agreements.

In response to the Department's commitment to improve management practices and to adopt performance based budgeting, the Environmental Restoration program tracks performance measures in four areas: 1) completed characterization/assessments; 2) completed interim and removal actions and expedited response actions; 3) completed remedial actions; and 4) completed final D&D projects. Characterizations/Assessments are denoted by a completed key assessment document such as a ROD, Corrective Measure Study, Closure Plan, D&D Plan, Proposed Plan, NEPA document, or No Action Decision. Interim and removal actions are any actions resulting in physical cleanup progress, reduction of exposure to contaminants or containment of a source term or any action to restrict access to contaminants. Final remedial actions include RCRA closures, RCRA final corrective measures, CERCLA final remedial actions, FUSRAP site completions, UMTRA site completions, and completed underground tank programs. D&D final actions are completed when D&D objectives have been met and a report has been submitted for approval. In addition, the program tracks the status of on-going projects in the four performance areas. The budget request reflects specific details on the outputs which will be accomplished.

The Environmental Restoration budget request has been adjusted for projected productivity savings and contractors reduction savings which are discussed in the Environmental Management (EM) Executive Summary which precedes the EM budget justification documents. The EM Executive Summary addresses a number of initiatives being implemented in FY 1996. These include the use of prior year uncosted balances to offset the FY 1996 budget authority request, allocation of additional Federal staff to the field, and working with regulators to prioritize requirements within current compliance agreements due to the outyear budget targets.

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DEPARTMENT OF ENERGY
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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Environmental Restoration (Non-Defense)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Environmental Restoration					
Facilities and Sites (Non-Defense)					
Operating Expenses	$ 222,636	$ 220,165	$ -785	$ 219,380	$ 244,758
Formerly Utilized Sites Remedial Action Project (FUSRAP)					
Operating Expenses	41,485	74,100	0	74,100	85,200
Uranium Mill Tailings Remedial Action Project (UMTRAP)					
Operating Expenses	94,242	93,900	-5,783	88,117	80,000
Uranium Mill Tailings Remedial Action Groundwater Project					
Operating Expenses	6,794	7,000	0	7,000	7,800
Total, Environmental Restoration	$ 365,157	$ 395,165	$ -6,568	$ 388,597	$ 417,758
Summary					
Operating Expenses	$ 365,157	$ 395,165	$ -6,568	$ 388,597	$ 417,758
Total Program	$ 365,157	$ 395,165	$ -6,568	$ 388,597	$ 417,758
Staffing (FTEs)	0	0	0	0	0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Environmental Restoration

Field offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Los Alamos National Laboratory	$ 488	$ 1,611	$ 0	$ 1,611	$ 0
Grand Junction Project Office	28,534	36,396	0	36,396	50,869
Inhalation Toxicology Research Institute	2,720	1,702	0	1,702	1,638
Albuquerque Operations Office	101,036	100,900	-5,783	95,117	87,800
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 132,778	$ 140,609	$ -5,783	$ 134,826	$ 140,307
CHICAGO OPERATIONS OFFICE					
Princeton Plasma Physics Lab	$ 1,080	$ 0	$ 0	$ 0	$ 0
Argonne National Lab (East)	10,040	9,400	0	9,400	5,509
Brookhaven National Lab	9,401	13,400	0	13,400	23,392
Chicago Operations Office	23,065	18,317	0	18,317	17,220
Argonne National Lab (West)	1,211	1,053	0	1,053	2,000
Subtotal, CHICAGO OPERATIONS OFFICE	$ 44,797	$ 42,170	$ 0	$ 42,170	$ 48,121
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 51,924	$ 75,582	$ 0	$ 75,582	$ 83,700
Weldon Springs Remedial Action Project	39,702	53,198	0	53,198	67,500
Oak Ridge Institute for Science & Education	704	700	0	700	700
Oak Ridge National Lab	67,929	44,823	0	44,823	42,506
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 160,259	$ 174,303	$ 0	$ 174,303	$ 194,406
OAKLAND OPERATIONS OFFICE					
Energy Technology Engineering Center	$ 3,352	$ 3,240	$ 0	$ 3,240	$ 3,400
Oakland Operations Office	10,416	8,655	0	8,655	8,585
Lawrence Berkeley Lab	3,269	3,922	0	3,922	4,160
Stanford Linear Accelerator Center	1,000	1,170	0	1,170	742
Subtotal, OAKLAND OPERATIONS OFFICE	$ 18,037	$ 16,987	$ 0	$ 16,987	$ 16,887
OHIO FIELD OFFICE					
Mound Plant	$ 3	$ 1,736	$ 0	$ 1,736	$ 1,223

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FIELD OFFICE FUNDING BY SITE - Environmental Restoration and Waste Management (Non-Defense) (con'd)

Field offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Site	$ 271	$ 292	$ 0	$ 292	$ 4,300
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 9,012	$ 19,068	$ -785	$ 18,283	$ 12,514
TOTAL	$ 365,157	$ 395,165	$ -6,568	$ 388,597	$ 417,758

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

SUMMARY OF CHANGES

Non-Defense Environmental Restoration

FY 1995 Appropriation	$395,165
- Adjustment	-6,568
FY 1995 Adjusted	388,597
Facilities and Sites (Non-Defense)	
- Increase will support continuation of priority remediation activities that must be undertaken immediately to minimize or prevent significant risk to workers, the public, or environment and that are required by current Federal, State, local regulatory agreements, other legal requirements, and DOE Orders. Major increases in FY 1996 are at the Grand Junction Projects Office (GJPO) in Colorado, at Argonne National Laboratory-West in Idaho, and the Brookhaven National Laboratory in New York	+19,521
- Continue support of landlord activities at GJPO in Colorado	+5,609
- Continue to fund uranium leasing, compliance oversight, and long-term S&M activities at GJPO in Colorado	+248
Formerly Utilized Sites Remedial Action Project (FUSRAP)	
- Complete assessment/characterization at three sites; Complete two removal actions and transport waste; acquire St. Louis Airport site; and continue S&M activities at seven sites.	+11,100
Uranium Mill Tailings Remedial Action Project (UMTRAP)	
- Large percentage of vicinity properties identified under UMTRAP have been completed by end of FY 1995	-8,117
Uranium Mill Tailings Remedial Action Groundwater Project	
- Continue detailed site characterization at three sites; initiate detailed site characterization at one site; initiate compliance strategy at first site	+800
FY 1996 Congressional Budget Request	$417,758

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL RESTORATION

I. Preface: Facilities and Sites (Non-Defense)

The Facilities and Sites activity conducts remedial actions and decontamination and dismantlement (D&D) projects to reduce and remove the potential risks to the environment and to human health and safety resulting from past Department of Energy (DOE) activities. Execution of this program is a key part of the Department's commitment to continue to protect public health and safety and to assure a safe and clean environment in connection with its activities. It also supports the Department's policy of compliance with the letter and spirit of applicable Federal, State, and local health, safety and environmental statutes. The Environmental Restoration program includes several sites on the Environmental Protection Agency's (EPA) National Priorities List (NPL). Other projects include activities related to ore handling and processing, reactor, laboratory, and fuel fabrication facilities and sites. All Field/Operations Office environmental restoration activities have been designated either a Major System Acquisition (MSA) or Major Project (MP) by DOE. For additional details on schedules and other site specific information, please refer to the various Operating Expense Funded Data Sheets included with this submission. Comparable defense efforts are included under the Defense Environmental Restoration and Waste Management Appropriation under the same title as shown here (i.e., Environmental Restoration/Facilities and Sites). Consolidated management and direction of both the non-defense and defense activities is provided by the Deputy Assistant Secretary for Environmental Restoration and the funding is shown in the appropriate appropriation account.

The Environmental Restoration budget request includes funds to conduct actions that must be undertaken immediately to minimize or prevent significant risk to workers, the public, or the environment; activities required by current (in place or in negotiation) Federal, State, and local regulatory agreements; and support of other legal requirements, DOE Orders, and a prudent amount of discretionary activities necessary for effective management of overall program efforts and appropriate levels of general support activities.

To provide maximum flexibility in addressing remediation efforts, all activities are budgeted under operating expenses and include capital equipment-type and construction-type activities. This is consistent with the manner in which Environmental Restoration activities were budgeted and approved by Congress in previous years. General crosscutting support efforts required for effective management and control of Environmental Restoration activities are also included in this budget.

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ANL	Argonne National Laboratory
BCL	Battelle Columbus Laboratory
BNL	Brookhaven National Laboratory
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CHO	Chicago Operations Office
D&D	Decontamination and Decommissioning
DOE	Department of Energy
EBR	Experimental Breeder Reactor
EBWR	Experimental Boiling Water Reactor
EE/CA	Engineering Evaluation/Cost Analysis
EPA	Environmental Protection Agency
ER	Environmental Restoration
FFA	Federal Facility Agreement
FS	Feasibility Study
GA	General Atomics
GE	General Electric
GJPO	Grand Junction Project Office
HWCTR	Heavy Water Cooling Test Reactor
ITRI	Inhalation Toxocology Research Institute
IVC	Independent Verification Certification
LANL	Los Alamos National Laboratory
LBL	Lawrence Berkeley Laboratory
LEHR	Laboratory for Energy-Related Health Research
LLW	Low-Level Waste
LTSM	Long-Term Surveillance and Maintenance
NEPA	National Environmental Policy Act
OHF	Old Hydrofracture Facility
OU	Operable Unit
ORAU	Oak Ridge Associated Universities
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations Office
PPPL	Princeton Plasma Physics Laboratory
RCRA	Resource Conservation & Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RMDF	Radioactive Material Disposal Facility
ROD	Record of Decision
S&M	Surveillance and Maintenance
SFO	San Francisco Operations Office
SLAC	Stanford Linear Accelerator Center
SPRU	Separations Process Research Unit
SSFL	Santa Susana Field Laboratory
SRS	Savannah River Site
SWMU	Solid Waste Management Unit
TRU	transuranic
UMTRA	Uranium Mill Tailings Remedial Action
UST	Underground Storage Tank
WAG	Waste Area Group
WSSRAP	Weldon Spring Site Remedial Action Project

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II. ENVIRONMENTAL RESTORATION PROGRAM BY SITE FOR FACILITIES & SITES (Non-Defense):

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Grand Junction Project Office, CO/Monticello, UT	28,534	36,395	50,869
Inhalation Toxicology Research Institute, NM	2,720	1,702	1,638
Los Alamos National Laboratory, NM	488	1,611	0
Ames Laboratory, Iowa	1,080	0	0
Argonne National Laboratory-East, IL	10,040	9,400	5,509
Argonne National Laboratory-West, ID	1,211	1,053	2,000
Battelle Columbus Laboratories, OH	15,230	17,350	16,006
Brookhaven National Laboratory, NY	9,401	13,400	23,392
Chicago Operations Office, IL	7,835	967	1,214
Oak Ridge National Laboratory, TN	66,933	44,023	41,706
Oak Ridge Operations Office	12,139	2,982	0
Weldon Spring Site Remedial Action Project, MO	39,702	53,198	67,500
Mound Plant, OH	3	1,736	1,223
General Atomics, CA	3,000	2,700	3,000
General Electric, CA	44	360	105
Lawrence Berkeley Laboratory, CA	3,269	3,922	4,160
San Francisco Operations Office, CA	831	1,538	750
Santa Susana Field Laboratory, CA	3,352	3,240	3,400
Stanford Linear Accelerator Center, CA	1,000	1,170	742
Laboratory for Energy-Related Health Research (LEHR), CA	6,541	4,057	4,730
Savannah River Site, SC	271	292	4,300
Headquarters	9,012	18,283	12,514
TOTAL	$222,636	$219,380	$244,758

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II. A. Summary Table: Facilities and Sites (Non-Defense)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Remedial Action				
Albuquerque				
Grand Junction Project Office (GJPO), CO.....	$ 16,539	$ 23,782	$ 34,444	$ 10,662
Inhalation Toxicology Research Institute (ITRI), NM.....	2,720	1,702	1,638	-64
Subtotal, Albuquerque	$ 19,259	$ 25,484	$ 36,082	$ 10,598
Chicago				
Argonne National Laboratory-East (ANL-E), IL.....	$ 3,490	$ 4,300	$ 2,920	$ -1,380
Argonne National Laboratory-West (ANL-W), ID.....	1,208	1,050	1,997	947
Ames Laboratory, IA.....	1,080	0	0	0
Brookhaven National Laboratory (BNL), NY.....	9,401	13,400	23,392	9,992
Chicago Operations Office (CHO), IL.....	7,361	721	930	209
Princeton Plasma Physics Laboratory (PPPL), NJ.....	432	212	250	38
Subtotal, Chicago	$ 22,972	$ 19,683	$ 29,489	$ 9,806
Oak Ridge				
Oak Ridge Operations Office (ORO), TN.....	$ 12,139	$ 2,982	$ 0	$ -2,982
Oak Ridge National Laboratory (ORNL), TN.....	60,409	38,762	34,133	-4,629
Weldon Spring Site Remedial Action Project (WSSRAP), MO.....	39,702	53,198	67,500	14,302
Subtotal, Oak Ridge	$ 112,250	$ 94,942	$ 101,633	$ 6,691
Oakland				
Laboratory for Energy-Related Health Research (LEHR), CA.....	$ 3,207	$ 2,042	$ 3,674	$ 1,632
Lawrence Berkeley Laboratory (LBL), CA.....	3,269	3,922	4,160	238
Oakland Operations Office (SFO), CA.....	831	1,538	750	-788
Santa Susana Field Laboratory (SSFL), CA.....	2,515	2,346	2,034	-312
Stanford Linear Accelerator Center (SLAC), CA.....	1,000	1,170	742	-428
Subtotal, Oakland	$ 10,822	$ 11,018	$ 11,360	$ 342
Headquarters				
Headquarters.....	$ 9,012	$ 18,283	$ 12,514	$ -5,769
Subtotal, Headquarters	$ 9,012	$ 18,283	$ 12,514	$ -5,769
Subtotal, Remedial Action	$ 174,315	$ 169,410	$ 191,078	$ 21,668

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II. A. Summary Table: Facilities and Sites (Non-Defense) - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Decontamination and Dismantlement (D&D)				
Albuquerque				
GJPO, CO	$ 4,084	$ 5,346	$ 3,300	$ -2,046
Los Alamos National Laboratory (LANL), NM	488	1,611	0	-1,611
Subtotal, Albuquerque	$ 4,572	$ 6,957	$ 3,300	$ -3,657
Chicago				
ANL-E, IL	$ 6,550	$ 5,100	$ 2,589	$ -2,511
ANL-W, ID	3	3	3	0
Battelle Columbus Laboratory (BCL), OH	15,230	17,350	16,006	-1,344
CHO, IL	42	34	34	0
Subtotal, Chicago	$ 21,825	$ 22,487	$ 18,632	$ -3,855
Oak Ridge				
ORNL, TN	$ 6,524	$ 5,261	$ 7,573	$ 2,312
Subtotal, Oak Ridge	$ 6,524	$ 5,261	$ 7,573	$ 2,312
Ohio				
Mound Plant, OH	$ 3	$ 1,736	$ 1,223	$ -513
Subtotal, Ohio	$ 3	$ 1,736	$ 1,223	$ -513
Oakland				
General Atomics (GA), CA	$ 3,000	$ 2,700	$ 3,000	$ 300
General Electric (GE), CA	44	360	105	-255
LEHR, CA	3,334	2,015	1,056	-959
SSFL, CA	837	894	1,366	472
Subtotal, Oakland	$ 7,215	$ 5,969	$ 5,527	$ -442
Savannah River				
Savannah River Site (SRS), SC	$ 271	$ 292	$ 4,300	$ 4,008
Subtotal, Savannah River	$ 271	$ 292	$ 4,300	$ 4,008
Subtotal, Decontamination and Dismantlement (D&D)	$ 40,410	$ 42,702	$ 40,555	$ -2,147
Landlord				
Albuquerque				
GJPO, CO	$ 6,978	$ 6,137	$ 11,746	$ 5,609

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II. A. Summary Table: Facilities and Sites (Non-Defense) - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Subtotal, Albuquerque	$ 6,978	$ 6,137	$ 11,746	$ 5,609
Subtotal, Landlord	$ 6,978	$ 6,137	$ 11,746	$ 5,609
Compliance Oversight				
Albuquerque				
GJPO, CO	$ 202	$ 45	$ 150	$ 105
Subtotal, Albuquerque	$ 202	$ 45	$ 150	$ 105
Subtotal, Compliance Oversight	$ 202	$ 45	$ 150	$ 105
Long-Term Surveillance and Maintenance (LTSM)				
Albuquerque				
GJPO, CO	$ 520	$ 866	$ 929	$ 63
Subtotal, Albuquerque	$ 520	$ 866	$ 929	$ 63
Subtotal, Long-Term Surveillance and Maintenance (LTSM)	$ 520	$ 866	$ 929	$ 63
Uranium Leasing				
Albuquerque				
GJPO, CO	$ 211	$ 220	$ 300	$ 80
Subtotal, Albuquerque	$ 211	$ 220	$ 300	$ 80
Subtotal, Uranium Leasing	$ 211	$ 220	$ 300	$ 80
Total, Facilities and Sites (Non-Defense)	$ 222,636	$ 219,380	$ 244,758	$ 25,378

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II. B. Laboratory and Facility Funding Table: Facilities and Sites (Non-Defense)

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 10,040	$ 9,400	$ 5,509	$ -3,891
Argonne National Lab (West)	1,211	1,053	2,000	947
Chicago Operations Office	23,065	18,317	17,220	-1,097
Energy Technology Engineering Center	3,352	3,240	3,400	160
Grand Junction Project Office	28,534	36,396	50,869	14,473
Mound Plant	3	1,736	1,223	-513
Oakland Operations Office	10,416	8,655	8,585	-70
Princeton Plasma Physics Lab	1,080	0	0	0
Savannah River Site	271	292	4,300	4,008
Stanford Linear Accelerator Center	1,000	1,170	742	-428
Washington Headquarters	9,012	18,283	12,514	-5,769
Weldon Springs Remedial Action Project	39,702	53,198	67,500	14,302
Brookhaven National Lab	9,401	13,400	23,392	9,992
Inhalation Toxicology Research Institute	2,720	1,702	1,638	-64
Lawrence Berkeley Lab	3,269	3,922	4,160	238
Los Alamos National Laboratory	488	1,611	0	-1,611
Oak Ridge National Lab	66,933	44,023	41,706	-2,317
All Other	12,139	2,982	0	-2,982
Total, Facilities and Sites (Non-Defense)	$ 222,636	$ 219,380	$ 244,758	$ 25,378

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facilities and Sites (Non-Defense)			
Remedial Action			
Albuquerque			
Grand Junction Project Office (GJPO), CO	Conducted ground and surface water monitoring in support of the RI and preparation of annual monitoring report; evaluated data to determine additional data requirements; initiated characterization investigation for Operable Unit (OU) III peripheral properties.	Continue ground and surface water monitoring in support of the RI and preparation of annual monitoring report; initiate human health and ecological risk assessment; complete characterization investigation for OU III peripheral properties.	Will complete the human health and ecological risk assessment; will prepare draft RI report; will prepare draft FS report; will continue ground and surface water monitoring in support of annual monitoring report.
	Completed remediation of 62 Monticello, Utah, vicinity properties; conducted radiological assessments at 38 properties; submitted completion reports for 65 properties; completed engineering design packages for 102 properties; completed radiological assessments and engineering designs for four peripheral property packages; initiated and completed rebaselining of all Monticello project activities to meet a tailings haul schedule to a preferred disposal site; continued remediation of peripheral properties; continued community relations activities; continued independent verification activities.	Complete remedial action at 81 Monticello vicinity properties; submit completion reports for 90 properties; complete engineering design packages for 13 properties; continue remediation of peripheral properties; initiate final design related to final disposal site; continue community relations activities; continue independent verification activities.	Will complete remedial action on 26 vicinity properties; will submit completion reports for 90 properties; will continue remediation of peripheral properties; will initiate construction of on-site repository; will continue community relations activities; will continue independent verification activities.
	$ 16,539	$ 23,782	$ 34,444
Inhalation Toxicology Research Institute (ITRI), NM	Continued remediation of the diesel oil release; initiated remediation of hot ponds and sanitary lagoons; continued to provide for project planning and management activities.	Complete remediation of the diesel oil release; complete remediation of the sanitary lagoons and hot ponds; initiate remediation of nitrates in the groundwater; continue to provide for project planning and management of remediation activities.	Will initiate movement of lagoon sludge to on-site monofill and continue remediation of nitrates in the ground water; will continue to provide project planning and management of remediation activities.

III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Inhalation Toxicology Research Institute (ITRI), NM (Cont'd)	$ 2,720	$ 1,702	$ 1,638
Subtotal, Albuquerque	$ 19,259	$ 25,484	$ 36,082
Chicago			
Argonne National Laboratory-East (ANL-E), IL	Continued efforts on the RFI at the 800 Area Landfill; conducted groundwater monitoring required by Illinois State Code; continued characterization of the 317/319/ENE Area; continued site-wide hydrogeologic baseline study; continued assessments for new Solid Waste Management Units (SWMUs); issued interim report for SWMUs; continued assessment of the 570 Holding Pond; provided program management support for program planning and integration.	Continue efforts on the RFI at the 800 Area Landfill; continue ground water monitoring required by Illinois State Code; continue characterization of the 317/319/ENE Area; conduct Phase II work plan and field work for the site-wide hydrogeologic baseline study; continue assessments for SWMUs; continue assessment at 570 Holding Pond; initiate assessment of Building 810; continue to provide program management support for program planning and integration.	Will complete RFI field work at the 800 Area Landfill; will continue groundwater monitoring required by Illinois State Code; will complete draft RFI report of the 317/319/ENE Area; will complete Phase II and begin computer modeling for site-wide hydrogeologic baseline study; will complete assessment of Building 810; will continue to provide program management support for program planning and integration.
	Continued annual removal of lime sludge; completed placement of the 800 Area Landfill cover; initiated and completed two small removal actions and continued Map Tube removal at the 317/319 Area.	Continue annual removal of lime sludge; complete Map Tube removal at 317/319 Area; complete interim action at Building 810; initiate barrier to tritium seep and demolition of South Vaults in 317/319 Area.	Will complete removal of lime sludge; will seal abandoned wells and boreholes; will initiate interim action in 800 Area.
	$ 3,490	$ 4,300	$ 2,920
Argonne National Laboratory-West (ANL-W), ID	Initiated the Burn Pit and Oil Spill Area investigation and background research activities; continued Experimental Breeder Reactor (EBR) assessment activities.	Continue the Burn Pit and Oil Spill Area investigation and complete background research activities; initiate accelerated Remedial Investigation/Feasibility Study (RI/FS) activities; continue EBR assessment activities; provide program management support.	Will complete Burn Pit and Oil Spill Area investigation; will continue accelerated RI/FS activities; will continue EBR assessment activities; will provide program management support.

III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Argonne National Laboratory-West (ANL-W), ID (Cont'd)	$ 1,208	$ 1,050	$ 1,997
Ames Laboratory, IA	Completed removal of sludge from leach pit.	No activity.	No activity.
	$ 1,080	$ 0	$ 0
Brookhaven National Laboratory (BNL), NY	Initiated RI/FS activities including RI field work for the Waste Disposal Areas and Accidental Spill Sites (OU1); continued planning efforts for RI/FS at OU2; continued draft FS for the Central Steam Facility (OU4); continued RI/FS activities at the sewage treatment plant (OU5); continued work plan development for RI/FS work in OU3; continued site-wide hydrogeologic study; provided program management support.	Revise draft RI report and submit draft FS report on OU1; complete draft FS for OU4; continue RI/FS activities at the Sewage Treatment Plant (OU5); continue planning efforts for RI/FS at OU2; continue work plan development for RI/FS work at OU3; continue site-wide hydrogeologic study; conduct additional Preliminary Assessments/Site Investigations as needed; provide program management support.	Will complete FS for Waste Disposal Areas and Accidental Spill Sites (OU1); will initiate RI/FS activities at the Graphite Research Reactor and Paint Shop/Old Firehouse (OU2); will begin field work at OU3 for RI/FS; will begin design for the Central Steam Facility (OU4); will continue RI/FS activities at the Sewage Treatment Plant (OU5); will complete site-wide hydrogeologic study; will provide program management support.
	Continued removal actions at the D Tank, spray aeration, and cesspools; completed Engineering Evaluation/Cost Analysis (EE/CA) for the Landfills Closure interim action; completed UST removal at Building 650.	Complete D Tank removal and field work for cesspools removal; complete the EE/CA and action memorandum for spray aeration; initiate remedial action design for the Landfills Closure interim action; complete removal of petroleum contaminated soil at OU4.	Will complete cesspool removal; will begin design of spray aeration interim action; will continue Landfills Closure interim action.
	$ 9,401	$ 13,400	$ 23,392
Chicago Operations Office (CHO), IL	Monitored CHO-managed sites and facilities; provided systems/tracking methods for program planning and integration; conducted characterization activities at Site A/Plot M.	Provide monitoring of CHO-managed sites and facilities; provide systems/tracking methods for program planning and integration; complete characterization activities at Site A/Plot M.	Will provide monitoring of CHO-managed sites and facilities; will provide systems/tracking methods for program planning and integration; no activity for Site A/ Plot M (program will be supported under Defense Key Activity Summary for Environmental Restoration).

III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago Operations Office (CHO), IL (Cont'd)	$ 7,361	$ 721	$ 930
Princeton Plasma Physics Laboratory (PPPL), NJ	Provided program management support of Environmental Restoration (ER) activities; continued assessment activities required by Memorandum of Understanding including contaminated groundwater investigation, previously funded from other projects; completed CERCLA inventory.	Provide program management support of ER activities; conduct assessment activities, including groundwater investigation and the completion of the RI.	Will provide program management support of ER activities; will complete assessment activities, including preparation of the draft Record of Decision (ROD).
	$ 432	$ 212	$ 250
Subtotal, Chicago	$ 22,972	$ 19,683	$ 29,489
Oak Ridge			
Oak Ridge Operations Office (ORO), TN	Provided for administrative and technical contracts, and litigation expenses needed to support the OR Environmental Restoration Program, provided oversight to ensure compliance with FFA; conducted other crosscutting efforts required to support growth of ORO activities at the various installations and sites; continued contract management oversight to ER activities.	Provide for administrative and technical contracts, and litigation expenses needed to support the OR Environmental Restoration Program.	No activity.
	$ 12,139	$ 2,982	$ 0

III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge National Laboratory (ORNL), TN	Performed a treatability study at Waste Area Group (WAG) 11; continued RI/FSs at WAGs 1, 2, 5, and 7; initiated RI/FS and continued surveillance and maintenance (S&M) at ORNL WAGs; conducted preliminary site investigation and monitoring at WAG 2; continued groundwater assessment activities for entire ORNL area; provided program management support. Additional activities funded under Defense Key Activity Summaries section.	Complete RI/FS at WAG 1; prepare ROD for WAG 1; continue S&M at ORNL WAGs; continue groundwater assessment activities for entire ORNL area; provide program management support. Additional activities funded under Defense Key Activity Summaries section.	Will continue RI/FS at WAG 2; will continue S&M at ORNL WAGs; will delay preliminary site investigation and monitoring at WAG 2; will reduce groundwater assessment activities for entire ORNL area; will provide program management support. Additional activities funded under Defense Key Activity Summaries section.
	Designed a removal system for WAG 5 seeps; drained low-level waste tanks and designed surge tanks at WAG 1; completed interim corrective measures (ICM) at WAGs 11 and 13; conducted WAG 6 well plugging and abandonment (P&A); continued ICM at WAG 1; initiated the ORNL WAG 7 Pit 1 in-situ vitrification demonstration. Additional activities funded under Defense Key Activity Summaries section.	Conduct a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) removal action for WAG 5 seeps; continue monitoring P&A at WAG 6; build surge tanks at WAG 1; continue corrective measures at WAG 1. Additional activities funded under Defense Key Activities section.	Will continue monitoring P&A at WAG 6; will delay P&A site remediation at WAG 10. Additional activities funded under Defense Key Activity Summaries section.
	$ 60,409	$ 38,762	$ 34,133
Weldon Spring Site Remedial Action Project (WSSRAP), MO	Continued Quarry residuals Phase I characterization; continued the Quarry residuals RI/FS and the Chemical Plant site groundwater RI/FS; continued environmental review and analysis support; completed Highway 94 improvements.	Continue Quarry residuals Phase I and begin Phase II characterization; continue the Quarry residuals RI/FS and the Chemical Plant site groundwater RI/FS; start and complete raffinate pit debris characterization; continue environmental review and analysis support.	Will complete Quarry residuals Phase I and II characterization; will continue the Quarry residuals RI/FS and the Chemical Plant site groundwater RI/FS; will continue environmental review and analysis support.

III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Weldon Spring Site Remedial Action Project (WSSRAP), MO (Cont'd)	Continued project management administration, and implementation; continued Quarry bulk waste removal operations; continued treatment and disposal of water impounded in the Quarry and the Chemical Plant site; continued operation of the temporary storage area for Quarry bulk waste; continued dismantlement of Chemical Plant site buildings; completed design and initiated construction of the pilot sludge processing facility; initiated design of the site disposal facility; completed design of the soil borrow area; completed design and initiated construction of the site water treatment plant-train 2; continued operation of the material staging area; completed construction of site water treatment plant-train 1 nitrate removal system; continued design of the contractor material staging area; and continued to provide Independent Verification Contractor (IVC) support.	Continue project management, administration, and implementation; continue Quarry bulk waste removal operations; continue treatment and disposal of water impounded in the Quarry and the Chemical Plant site; continue operation of the temporary storage area for Quarry bulk waste; complete dismantlement of Chemical Plant site buildings; complete construction and begin operation of the pilot sludge processing facility; begin detailed design of full-scale sludge processing facility; complete design for building foundation removal; continue clean portion design of the site disposal facility; continue design of contaminated portion of disposal facility; initiate construction of soil borrow area haul road; complete construction of the site water treatment plant-train 2; continue operation of the material staging area; continue Raffinate Pits remediation detail design; complete design and initiate construction of contractor material staging area; initiate construction of site drainage control facilities; design site waste processing facility; and continue to provide IVC support.	Will continue project management, administration, and implementation; will complete Quarry bulk waste removal operations; will continue treatment and disposal of water impounded in the Quarry and the Chemical Plant site; will continue operation of the temporary storage area for Quarry bulk waste; will complete design of the full-scale sludge processing facility; will begin removal of building foundations; will continue operation of the material staging area; will complete design of the clean portion of the site disposal facility; will complete design of contaminated portion of disposal facility; will complete construction of the soil borrow area; will begin construction of the site waste processing facility; will complete construction of the contractor material staging area; will complete construction of site drainage control facilities; will complete construction of soil borrow area and haul road; will continue to provide IVC support.
	$ 39,702	$ 53,198	$ 67,500
Subtotal, Oak Ridge	$ 112,250	$ 94,942	$ 101,633

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III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland			
Laboratory for Energy-Related Health Research (LEHR), CA	Developed RI/FS work plan; continued environmental monitoring activities; continued to support required program management activities.	Initiate RI field work; continue environmental monitoring activities; continue to support required program management activities.	Will complete RI field work; will prepare RI report and draft FS; will continue environmental monitoring activities; will continue to support required program management activities.
	$ 3,207	$ 2,042	$ 3,674
Lawrence Berkeley Laboratory (LBL), CA	Remedial actions at LBL are conducted in compliance with the site's RCRA Part B permit; conducted risk assessment; completed the first (Phase I) Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) progress report to regulatory agencies; continued site-wide sampling of the vadose zone; continued Phase I RFI field work and began Phase I corrective measures study to examine options for remediation of contaminants; continued support of required program management activities including cost estimating and management, reporting, budget preparation, quality assurance, stakeholder interface and administrative record keeping.	Remedial actions at LBL are conducted in compliance with the site's RCRA Part B Permit; continue assessment, field work, and sampling of contamination on-site and off-site; prepare Phase III work plan; complete vadose zone study; complete the second (Phase II) RFI report and submit it to the regulatory agencies; complete Corrective Measures Study (CMS) work plan and perform pilot scale tests of remediation techniques; continue support of required program management activities including cost estimating and management, budget preparation, reporting, quality assurance, stakeholder interface, and administrative record keeping.	Will begin closure of the LBL Hazardous Waste Handling Facility (HWHF) in compliance with RCRA requirements; will update HWHF closure work plan; will begin assessment of any contamination; will continue sitewide RFI and Corrective Measure Study (CMS) activity in compliance with RCRA Part B Permit; will perform Phase III hydrogeologic, geology, and geophysical studies; will collect Phase III, water, soil, air and biota samples, drill Phase III wells; will complete draft Phase III RFI report; will complete and submit Phase I CMS report and will begin draft Corrective Measures Plan (CMP); will continue essential Program Management functions including cost estimating and management, budget preparation, reporting, quality assurance, stakeholder interface and administrative record keeping.
	Continued treatment of contaminated water from hydraugers near Building 51, treatment of contaminated groundwater near Buildings 46 and 71 to prevent contamination from reaching Blackberry Creek, treatment of water near Building 37 to prevent off-site migration; and interim actions at the gas spill area near Building 37.	Continue interim groundwater treatment near Buildings 51, 46, 71, and 37 to prevent migration of contaminants while a final remedial strategy is developed.	Will continue interim actions near Buildings 46, 71, 51, and 37 to prevent off-site migration of contaminants.

III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Berkeley Laboratory (LBL), CA (Cont'd)	$ 3,269	$ 3,922	$ 4,160
Oakland Operations Office (SFO), CA	Prepared input for baselines, project plans, project tracking systems, program management systems, and document reviews all related to the Environmental Restoration Program.	Prepare input for baselines, project plans, project tracking systems, program management systems, and document reviews all related to the Environmental Restoration Program.	Will prepare input for baselines, project plans, project tracking systems, program management systems, and document reviews all related to the Environmental Restoration Program.
	$ 831	$ 1,538	$ 750
Santa Susana Field Laboratory (SSFL), CA	Continued to provide support for Federal and State regulatory agency interface, reviews, and reports; initiated activities to characterize and monitor the vadose zone; conducted geologic coring; installed monitoring wells; carried out soil investigations; continued required program management, activities in support of ER projects.	Continue to provide support for Federal and State regulatory agency interface and reviews; continue site-wide RFI characterization, and environmental monitoring; and continue required program management activities in support of ER projects.	Will continue to provide support for Federal and State regulatory agency interface and reviews; will complete sitewide radiological characterization; will complete groundwater remediation plan; and will continue required program management activities in support of ER projects.
	Continued to provide for operation of the groundwater extraction well system and treatment of contaminated groundwater.	Continue to provide for operation of the groundwater extraction well system and treatment of contaminated groundwater.	Will continue to provide for operation of the groundwater extraction well system and treatment of contaminated groundwater.
	$ 2,515	$ 2,346	$ 2,034

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III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Stanford Linear Accelerator Center (SLAC), CA	Remedial actions at SLAC are conducted in compliance with California Regional Water Control Board Order 85-88, DOE Orders, and Toxic Substances Control Act (TSCA); completed RI/FS workplan, quality assurance plan, and health and safety plan; began site-wide RI field work for soil and groundwater contamination; conducted soil gas surveys, hydrologic report review; provided for program management functions.	Remedial actions at SLAC are conducted in compliance with California Regional Water Control Board 85-88, DOE Orders, and TSCA; conduct site-wide remedial investigation focusing on four identified sites with confirmed groundwater contamination; install monitoring wells; conduct hydrologic and geophysical testing; collect and analyze soil and groundwater samples; and continue soil gas analyses; continue essential program management functions including cost estimating and management, reporting, stakeholder interface and administrative recordkeeping.	Remedial actions at SLAC are conducted in compliance with California Regional Water Control Board Order 85-88, DOE Orders, and TSCA; will continue site-wide remedial investigation including collection of soil/groundwater/air/biota samples, installation of monitoring wells and hydrological geological studies; will continue essential program management functions including cost estimating and management, reporting, stakeholder interface and administrative record keeping.
	Began removal of polychlorinated biphenyls (PCB)-contaminated soil at six sites and an interim action for PCB removal at the 3.0 megawatt power supply.	Evaluate IR-6/IR-8 contamination and take steps to prevent further off-site migration.	Will begin removal action for IR-6/IR-8 off-site PCB contamination including contracting and designing; will begin physical action.
	$ 1,000	$ 1,170	$ 742
Subtotal, Oakland	$ 10,822	$ 11,018	$ 11,360

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III. Facilities and Sites (Non-Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Headquarters			
Headquarters	Provided technical support and assistance in the development and maintenance of program and budget data bases related to site investigations, site remediation, and radiological protection, environmental compliance, cost and schedule control systems, and historical correspondence and information on program sites and vicinity properties.	Provide technical support and assistance in the development and maintenance of program and budget data bases related to site investigations, site remediation, and radiolocaigal protection, environmental compliance, cost and schedule control systems, and historical correspondence and information on program sites and vicitity properties. Increase due to funding Robotics University program, PTS support, National Academy of Sciences, etc.	Will provide technical support and assistance in the development and maintenance of program and budget data bases related to site investigations, site remediation, and radiological protection, environmental compliance, cost and schedule control systems, and historical correspondence and information on program sites and vicinity properties.
	$ 9,012	$ 18,283	$ 12,514
Subtotal, Headquarters	$ 9,012	$ 18,283	$ 12,514
Subtotal, Remedial Action	$ 174,315	$ 169,410	$ 191,078
Decontamination and Dismantlement (D&D)			

III. Facilities and Sites (Non-Defense) (Cont'd):
Decontamination and Dismantlement (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Albuquerque			
GJPO, CO	Continued environmental monitoring; continued independent verification of GJPO Remedial Action Project activities.	Continue environmental monitoring; continue independent verification of GJPO Remedial Action Project activities.	Will continue environmental monitoring; will continue independent verification.
	Completed removal of tailings; initiated reconstruction of disturbed areas; initiated D&D of buildings.	Complete replacement of wetlands and reconstruction of site; continue D&D of buildings; prepare closeout documents for remediated areas.	Will continue D&D of buildings.
	$ 4,084	$ 5,346	$ 3,300
Los Alamos National Laboratory (LANL), NM	Continued to provide program support of D&D efforts at the TA-35 Phase Separator Pit; continued assessment activities at the TA-35 Phase Separator pit; provided program management support for D&D activities.	Complete assessment activities at the TA-35 Phase Separator Pit; program management activities supported by Defense funding.	No activity; funding for TA-35 Phase Separator Pit D&D activities will be provided under Defense funding.
	No activity.	Initiate D&D activities at the TA-35 Phase Separator Pit.	No activity.
	$ 488	$ 1,611	$ 0
Subtotal, Albuquerque	$ 4,572	$ 6,957	$ 3,300

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III. Facilities and Sites (Non-Defense) (Cont'd):
Decontamination and Dismantlement (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago			
ANL-E, IL	Continued D&D of the M-Wing hot cells and the D-Wing gloveboxes; completed removal of the Experimental Boiling Water Reactor (EBWR) reactor vessel internal materials; completed preparations for removal of the EBWR vessel; initiated and completed out-building, Yard Area, and Rod Storage Area demolition at the CP-5 Research Reactor.	Continue D&D activities for CP-5 Reactor; complete D&D of the EBWR (including vessel) and hot cells; continue D&D of gloveboxes (including completion of size reduction); complete removal of the process system at the CP-5 Research Reactor.	Will continue D&D activities for the CP-5 reactor including completion of several major components; will complete D&D of gloveboxes; will transfer hot cells and gloveboxes to Landlord.
	$ 6,550	$ 5,100	$ 2,589
ANL-W, ID	Continued S&M at the Liquid Waste Process Area.	Continue S&M at the Liquid Waste Process Area.	Will continue S&M at the Liquid Waste Process Area.
	$ 3	$ 3	$ 3
Battelle Columbus Laboratory (BCL), OH	Continued S&M of inactive BCL facilities and provided program management support.	Continue S&M of inactive BCL facilities and provide program management support.	Will continue S&M of inactive BCL facilities and will provide program management support.
	Released Building 9 at King Avenue; initiated D&D of Buildings 1, 4, and 5; completed D&D of Building 3 at King Avenue; completed and released Building 7A; continued low-level waste (LLW) management and shipment activities.	Complete D&D of Buildings 4 and 5; continue D&D of Building 1; resume D&D of Building 7, provide minimum number of LLW shipments to the Hanford site in Washington and a commercial facility; provide for shipment of remote-handled transuranic waste; purchase required D&D equipment; maintain waste minimization activities.	Will complete D&D of Buildings 1 and 7; will initiate and complete D&D of Buildings A and 6; will continue D&D of Building 2 from FY93; will continue LLW management and shipment activities; will maintain waste minimization activities.
	$ 15,230	$ 17,350	$ 16,006
CHO, IL	Continued S&M at Hallam and Piqua; provided oversight and monitoring of S&M programs at CHO-managed sites and facilities.	Continue S&M at Hallam and Piqua.	Will continue S&M at Hallam and Piqua.

III. Facilities and Sites (Non-Defense) (Cont'd):
Decontamination and Dismantlement (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
CHO, IL (Cont'd)			
	$ 42	$ 34	$ 34
Subtotal, Chicago	$ 21,825	$ 22,487	$ 18,632
Oak Ridge			
ORNL, TN	Revised and maintained lifecycle cost estimates; continued S&M or ORNL facilities; continued S&M planning and special projects.	Revise and maintain lifecycle cost estimates; continue S&M of ORNL facilities; continue S&M planning and special projects.	Will revise and maintain lifecycle cost estimates; will continue S&M of ORNL facilities; will continue S&M planning and special projects.
	Continued CERCLA-driven D&D of the Fission Product Pilot Plant and the Waste Evaporator Facility.	Continue CERCLA-driven D&D of the Fission Product Pilot Plant and the Waste Evaporator Facility.	Will continue CERCLA-driven D&D of the Fission Product Pilot Plant and the Waste Evaporator Facility.
	$ 6,524	$ 5,261	$ 7,573
Subtotal, Oak Ridge	$ 6,524	$ 5,261	$ 7,573
Ohio			
Mound Plant, OH	New Budget Authority and prior-year carryover were utilized to complete Sampling and Analysis Plan, Safety Analysis Review, and Title I design for the Semi-Works Cave and associated rooms.	No activity.	No activity.
	New Budget Authority and prior-year carryover were utilized to continue program management support activities.	Develop remediation phase Title II design for the Semi-Works Cave and associated rooms; continue program management support.	Will initiate decontamination activities for the Semi-Works Cave and associated rooms; will continue program management support; will ship waste which results from D&D of plutonium processing building.
	$ 3	$ 1,736	$ 1,223

III. Facilities and Sites (Non-Defense) (Cont'd):
Decontamination and Dismantlement (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Ohio	$ 3	$ 1,736	$ 1,223
Oakland			
General Atomics (GA), CA	Initiated Phase I activities including preparation of program plans and National Environmental Policy Act (NEPA) documentation; initiated Hot Cell Facility characterization activities; began planning for shipment of past- program LLW to Hanford and special nuclear material to temporary on-site location.	Complete Phase I activities including Hot Cell Facility characterization, removal of past program low-level equipment waste, and removal of irradiated fuel material; begin decontamination of the Hot Cell facility and dispose of generated LLW; provide for program support and management.	Will continue D&D of Hot Cell facility and will ship generated LLW to Hanford; will provide for program support and management activities.
	$ 3,000	$ 2,700	$ 3,000
General Electric (GE), CA	Continued S&M activities; provided for program support activities.	Continue S&M activities; begin hot cell and glovebox characterization; provide for program support activities.	Will continue S&M activities; will continue hot cell and glovebox characterization; will provide for program support activities.
	$ 44	$ 360	$ 105
LEHR, CA	Prepared D&D work plans for the Imhoff Building, Tank Trailer, and Cobalt-60 Building; initiated D&D of Imhoff Building and Tank Trailer.	Complete D&D of Imhoff building and related waste disposal activities; perform IVC activities; transport and dispose of Tank Trailer; and complete Cobalt-60 Building D&D; and related waste disposal activities.	Will initiate D&D of Dog Pens; will complete independent verification and final survey for Cobalt-60 Building.
	$ 3,334	$ 2,015	$ 1,056
SSFL, CA	Conducted S&M at Buildings 012, 024, the RMDF, and the work areas. Removed low-level radioactive contamination from Building 023; completed independent verification.	Continue S&M at Buildings 012, 024, the RMDF, and the work areas. Initiate and complete D&D of moderator cask and initiate D&D of Building 012.	Will continue S&M at Building 024 and the RMDF. Will complete D&D of Building 012.

III. Facilities and Sites (Non-Defense) (Cont'd):
Decontamination and Dismantlement (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
SSFL, EM (Cont'd)	$ 837	$ 894	$ 1,366
Subtotal, Oakland	$ 7,215	$ 5,969	$ 5,527
Savannah River			
Savannah River Site (SRS), SC	Continued S&M at the Heavy Water Cooling Test Reactor (HWCTR) facility; initiated efforts to obtain HWCTR facility acceptance.	Continue S&M at the HWCTR facility; obtain HWCTR facility acceptance.	Will complete characterization; will provide for the D&D engineering design; and continue S&M at the HWCTR facility.
	$ 271	$ 292	$ 4,300
Subtotal, Savannah River	$ 271	$ 292	$ 4,300
Subtotal, Decontamination and Dismantlement (D&D)	$ 40,410	$ 42,702	$ 40,555
Landlord			
Albuquerque			
GJPO, CO	Provided for routine maintenance and corrective maintenance activities; carried out efforts to provide for handicap accessibility; provided for improved GJPO site maintenance management to comply with required facility safety directives (DOE Orders 4330.4A and 5480.7A).	Continue to provide for basic services required for daily operations, such as maintenance and site management.	Will continue to provide basic services for daily operations; will provide environmental compliance support; will provide Occupational Safety and Health act (OSHA) compliance and emergency preparedness support; will provide oversight and technical support for site waste generating activities; will prepare Waste Minimization reports; will build a treatability facility to house waste treatment units.
	$ 6,978	$ 6,137	$ 11,746

III. Facilities and Sites (Non-Defense) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Albuquerque	$ 6,978	$ 6,137	$ 11,746
Subtotal, Landlord	$ 6,978	$ 6,137	$ 11,746
Compliance Oversight			
Albuquerque			
GJPO, CO	Continued to provide support to the State of Utah for Federal Facility Act (FFA) oversight activities at Monticello.	Continue to provide support to the State of Utah for FFA oversight activities at Monticello.	Will continue to provide support to the State of Utah for FFA oversight activities at Monticello.
	$ 202	$ 45	$ 150
Subtotal, Albuquerque	$ 202	$ 45	$ 150
Subtotal, Compliance Oversight	$ 202	$ 45	$ 150
Long-Term Surveillance and Maintenance (LTSM)			
Albuquerque			
GJPO, CO	Provided DOE Long-Term Surveillance and Maintenance (LTSM) for licensed Title I UMTRA Project sites and one Nuclear Waste Policy Act Section 151(c) site; continued NEPA compliance activities for the Section 151(c) site.	Continue to provide for LTSM of Title I sites and one Nuclear Waste Policy Act Section 151(c) site; continue NEPA compliance activities and complete site characterization activities at the Section 151(c) site; prepare Long-Term Surveillance Plan; and perform pre-transfer activities for Title II sites.	Will continue to provide for LTSM of Title I sites and the Nuclear Waste Policy Act Section 151(c) site; will prepare Long-Term Surveillance Plan and perform pre-transfer activities for Title II sites; will perform annual site inspections and maintenance for 10 Title I sites, two Title II sites, and the Section 151(c) site; will perform annual groundwater monitoring.
	$ 520	$ 866	$ 929

III. Facilities and Sites (Non-Defense) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Albuquerque	$ 520	$ 866	$ 929
Subtotal, Long-Term Surveillance and Maintenance (LTSM)	$ 520	$ 866	$ 929
Uranium Leasing			
Albuquerque			
GJPO, CO	Provided for the administration of 43 lease tracts including evaluation and approval of lessee exploration and mining plans; maintained procedures to ensure accurate calculation and collection of royalties; monitored surface disturbance of leasing activities for compliance with environmental stipulation and reclamation requirements of the leases; and maintained leases and routine maintenance of the calibration sites at Casper, WY; Grants, NM; George West, TX; and the large area calibration pads at the Grand Junction, CO airport; initiated and completed reclamation on four uranium lease sites.	Continue administration of 43 lease tracts including evaluation and approval of lessee exploration and mining plans; maintenance of procedures to ensure accurate calculation and collection of royalties; monitoring of surface disturbance of leasing activities for compliance with environmental stipulation and reclamation requirements of the leases; and keeping up the leases and routine maintenance of the calibration sites at Casper, WY; Grants, NM; George West, TX; and the large area calibration pads at the Grand Junction, CO airport.	Will continue administration of 43 lease tracts including evaluation and approval of lessee exploration and mining plans; will maintain procedures to ensure accurate calculation and collection of royalties; will monitor compliance with environmental stipulation and reclamation requirements of the leases; will keep up leases and maintain calibration sites at Casper, WY; George West, TX; and the large calibration pads at the Grand Junction, CO airport.
	$ 211	$ 220	$ 300
Subtotal, Albuquerque	$ 211	$ 220	$ 300
Subtotal, Uranium Leasing	$ 211	$ 220	$ 300
Facilities and Sites (Non-Defense)	$ 222,636	$ 219,380	$ 244,758

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL RESTORATION

1. **Preface:** Formerly Utilized Sites Remedial Action Project (FUSRAP)

This activity provides for remedial action at privately-owned former nuclear processing facilities that became contaminated as a result of Manhattan Engineering District (MED) or Atomic Energy Commission (AEC) work, or have been specifically assigned to the Department of Energy (DOE) by Congress. FUSRAP provides for removal or control of the radiological and chemical contaminants for which DOE is responsible at designated properties which are contaminated above current guidelines. The waste from remediation is generally stored temporarily on the facility site which was the source of the contamination. Later, the source facility is decontaminated and the waste is either stabilized in place, removed to a host State or commercial disposal facility for large waste quantities, or transported to an established DOE disposal site. For additional details on planned activities and other supporting information, please refer to the FUSRAP Operating Expense Funded Data Sheet included with this submission.

The project strategy is to complete a comprehensive site search and screening process that will establish total project scope and to implement both interim and final remedial actions under an approved project plan. This project plan details the requirements and schedules to complete the cleanup of all qualified sites currently in the project. There are currently 46 sites under this project, including six sites on the Environmental Protection Agency's (EPA) National Priorities List (NPL). Additional sites may be added when the site search and screening process is complete. The project is designated a Major System Acquisition (MSA) by DOE. Remedial action has been completed on 14 of the 46 sites currently included in the FUSRAP activity. An important aspect of the project strategy is the development and acquisition of disposal sites.

To provide maximum flexibility, all activities are budgeted under operating expenses and include capital equipment-type and construction-type activities. This is consistent with the manner in which Environmental Restoration activities were budgeted and approved by Congress in previous years.

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DOE	Department of Energy
EA	Environmental Assessment
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FS	Feasibility Study
FUSRAP	Formerly Utilized Sites Remedial Action Project
RI	Remedial Investigation
ROD	Record of Decision
S&M	Surveillance and Maintenance

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II. A. Summary Table: Formerly Utilized Sites Remedial Action Project (FUSRAP)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Alba Craft, OH	$ 1,335	$ 1,809	$ 0	$ -1,809
Aliquippa Forge, PA	4,097	100	0	-100
Associate Aircraft, OH	17	1,287	115	-1,172
Baker and Williams Warehouse, NY	121	39	0	-39
Baker Brothers, OH	38	6,810	104	-6,706
Bliss and Laughlin Steel, NY	0	764	296	-468
B&T Metals, OH	38	111	315	204
Chapman Value, MA	17	7	1,983	1,976
C.H. Schnoor, PA	83	7	1,109	1,102
Colonie, NY	13,517	13,891	6,636	-7,255
DuPont & Company, NJ	0	0	2	2
General Motors, MI	289	983	142	-841
Granite City Steel, IL	40	0	0	0
HHM Safe, OH	0	1,066	11	-1,055
Latty Avenue Properties, MO	2,553	2,135	2,364	229
Luckey, OH	148	165	6,669	6,504
Madison, IL	0	15	224	209
Maywood, NJ	4,230	13,678	15,998	2,320
Middlesex Sampling Plant, NJ	1,774	1,260	2,771	1,511
New Brunswick Site, NJ	709	380	5,582	5,202
Niagara Falls Storage Site, NY	2,099	1,104	1,099	-5
Painesville, OH	38	77	84	7
St. Louis Airport Site and Vicinity Properties, MO	1,816	5,083	21,122	16,039
St. Louis Downtown Site, MO	1,344	1,564	1,711	147
Seymour Specialty Wire, CT	165	0	0	0
Shpack Landfill, MA	113	108	219	111
Tonawanda Sites, NY	2,656	16,589	8,989	-7,600
Ventron, MA	753	905	335	-570
Wayne, NJ	3,495	4,163	6,080	1,917
W.R. Grace, MD	0	0	1,240	1,240
Total, Formerly Utilized Sites Remedial Action Project (FUSRAP)	$ 41,485	$ 74,100	$ 85,200	$ 11,100

II. B. Laboratory and Facility Funding Table: Formerly Utilized Sites Remedial Action Project (FUSRAP)

Oak Ridge Institute for Science & Education	$ 700	$ 700	$ 700	$ 0
Oak Ridge National Lab	0	800	800	0
Oak Ridge Operations Office	39,985	72,600	83,700	11,100
All Other	800	0	0	0
Total, Formerly Utilized Sites Remedial Action Project (FUSRAP)	$ 41,485	$ 74,100	$ 85,200	$ 11,100

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Formerly Utilized Sites Remedial Action Project (FUSRAP)			
Alba Craft, OH	Started Engineering Evaluation/Cost Analysis (EE/CA)-Categorical Exclusion (CK).	Complete EE/CA-CK.	No assessment activity.
	Completed remedial action at one house; prepared for site removal action.	Complete removal action; initiate and complete post-remedial action report (PRAR), site complete.	No remediation activity.
	$ 1,335	$ 1,809	$ 0
Aliquippa Forge, PA	Completed building decontamination and remedial action; transported and disposed of waste; initiated preparation of the PRAR; began preparation of the certification docket.	Complete and publish the PRAR; complete preparation of the certification docket; site complete.	No activity.
	$ 4,097	$ 100	$ 0
Associate Aircraft, OH	Provided site planning and support.	No assessment activity.	No assessment activity.
	No remediation activity.	Initiate and complete removal action; initiate preparation of PRAR.	Will complete PRAR and certification docket; site will be complete.
	$ 17	$ 1,287	$ 115
Baker and Williams Warehouse, NY	Published the PRAR for Building 513-519; started the site certification docket.	Complete the site certification docket; site complete.	No activity.
	$ 121	$ 39	$ 0

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III. Formerly Utilized Sites Remedial Action Project (FUSRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Baker Brothers, OH	Provided site planning and support; no remediation activity.	Initiate and complete EE/CA· Environmental Assessment/Finding of No Significant Impact (EA/FONSI); initiate and complete removal action; initiate preparation of PRAR.	No assessment activity; will complete PRAR; site will be complete.
	$ 38	$ 6,810	$ 104
Bliss and Laughlin Steel, NY	No activity.	Initiate and complete removal action.	Will transport and dispose of waste; will prepare PRAR and will start certification docket.
	$ 0	$ 764	$ 296
B&T Metals, OH	Provided community relations support and conducted pre·characterization activities.	Provide community relations support and conduct pre·characterization activities.	Will initiate site characterization.
	$ 38	$ 111	$ 315
Chapman Value, MA	Provided community relations support and conducted pre·characterization activities.	Provide community relations support and conduct pre·characterization activities.	No assessment activity; will initiate and complete remediation; will initiate PRAR and certification docket.
	$ 17	$ 7	$ 1,983
C.H. Schnoor, PA	Provided community relations support and conducted pre·characterization activities.	Provide community relations support and conduct pre·characterization activities.	No assessment activity; will initiate and complete remediation; will complete PRAR; site will be complete.
	$ 83	$ 7	$ 1,109
Colonie, NY	Completed the building EE/CA; initiated and completed data gap sampling; initiated site·wide EE/CA.	Complete site·wide EE/CA.	No assessment activity.

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III. Formerly Utilized Sites Remedial Action Project (FUSRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Colonie, NY (Cont'd)	Started decontamination; completed building prep for decontamination/ demolition; packaged for and initiated waste transportation disposal activities; continued S&M efforts.	Complete building decontamination; begin demolition of the building shell; continue waste transportation and disposal activities; continue S&M efforts.	Will complete demolition of the building; will start site remedial action; will continue waste transportation and disposal activities; will continue S&M efforts.
	$ 13,517	$ 13,891	$ 6,636
DuPont & Company, NJ	No activity.	No activity.	Will provide community relations support and conduct pre-characterization activities.
	$ 0	$ 0	$ 2
General Motors, MI	Provided community relations support and conducted pre-characterization activities.	Perform hazard assessment; complete remediation; initiate PRAR.	No assessment activity; will complete PRAR; will initiate certification docket.
	$ 289	$ 983	$ 142
Granite City Steel, IL	Transported waste for disposal; completed certification docket; site complete.	No activity.	No activity.
	$ 40	$ 0	$ 0
HHM Safe, OH	No activity.	Initiate and complete removal action; initiate and complete preparation of PRAR.	Will initiate and complete certification docket; site will be complete.
	$ 0	$ 1,066	$ 11
Latty Avenue Properties, MO	Completed the RI report addendum; completed the final FS-Environmental Impact Statement (EIS)/Proposed Plan (PP); began preparation of the draft ROD; continued site S&M.	Complete and issue the ROD; continue site S&M.	No assessment activity; will continue site S&M.

III. Formerly Utilized Sites Remedial Action Project (FUSRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Latty Avenue Properties, MO (Cont'd)	$ 2,553	$ 2,135	$ 2,364
Luckey, OH	Initiated site planning.	Continue site planning.	Will initiate site characterization.
	$ 148	$ 165	$ 6,669
Madison, IL	No activity.	Provide community relations support and conduct pre-characterization activities.	Will provide community relations support and conduct pre-characterization activities.
	$ 0	$ 15	$ 224
Maywood, NJ	Completed the FS-EIS/PP; issued the draft ROD to EPA; completed groundwater addendum in the ROD; completed EE/CA for pile; continued site S&M.	Complete ROD; initiate ROD selected remedy Phase I pile removal; continue remedial design process; continue site S&M.	No assessment activity; will continue pile removal; will continue remedial design process; will continue site S&M.
	$ 4,230	$ 13,678	$ 15,998
Middlesex Sampling Plant, NJ	Initiated EE/CA-EA; continued site S&M; removed and replaced selected groundwater monitoring wells.	Complete EE/CA-EA; continue site S&M.	No assessment activity; will perform treatment and remedy studies; will continue site S&M.
	$ 1,774	$ 1,260	$ 2,771
New Brunswick Site, NJ	Performed additional characterization; continued site S&M.	No assessment activity; continue site S&M.	No assessment activity; will initiate and complete remedy implementation.
	$ 709	$ 380	$ 5,582
Niagara Falls Storage Site, NY	Continued preparation of two PRARs; continued design of the cap for the disposal cell; continued site S&M.	Perform limited Dense Non-Aqueous Phased Liquid (DNAPL) investigations on-site and characterization of vicinity properties; complete final cap design; complete PRAR; continue site S&M.	No assessment activity; will remediate vicinity properties and treat/ship waste; will continue site S&M.

III. Formerly Utilized Sites Remedial Action Project (FUSRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Niagara Falls Storage Site, NY (Cont'd)	$ 2,099	$ 1,104	$ 1,099
Painesville, OH	Provided community relations support and conducted pre-characterization activities.	Provide community relations support and conduct pre-characterization activities.	Will provide community relations support and conduct pre-characterization activities.
	$ 38	$ 77	$ 84
St. Louis Airport Site and Vicinity Properties, MO	Completed and issued the final FS-EIS/PP; continued preparation efforts for issuance of the ROD; continued site S&M.	Complete all necessary documents and issue the ROD; initiate and complete removal actions along selected haul route and vicinity properties; initiate site acquisition; prepare remedy implementation design; continue site S&M.	No assessment activity; will acquire St. Louis Airport Site property; will design remedial action contracts; will develop disposal site; will begin remedial action at vicinity properties.
	$ 1,816	$ 5,083	$ 21,122
St. Louis Downtown Site, MO	Completed the final FS-EIS/PP; began preparation of the draft ROD; completed the RI addendum; provided site support to owner.	Complete and issue the ROD; provide site support to owner.	No assessment activity; will provide site support to owner.
	$ 1,344	$ 1,564	$ 1,711
Seymour Specialty Wire, CT	Completed and published the PRAR and the certification docket; site complete.	No activity.	No activity.
	$ 165	$ 0	$ 0
Shpack Landfill, MA	Supported Potentially Responsible Parties.	Initiate the EE/CA-EA and hazard assessment.	Will complete and publish the EE/CA-EA and hazard assessment; will start PRAR.
	$ 113	$ 108	$ 219

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III. Formerly Utilized Sites Remedial Action Project (FUSRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Tonawanda Sites, NY	Submitted draft ROD to EPA; completed and published the FS/PP-EIS; held public meeting.	Complete ROD.	No assessment activity.
	Started option to purchase land for disposal site; initiated disposal cell design; continued S&M at Linde site; continued support to Linde.	Purchase land for the disposal site; complete disposal cell design; develop and initiate remedy implementation; continue S&M at Linde site; excavate Ashland 1.	Will operate waste containment structure; will excavate Ashland 2; will prepare PRAR for Ashland 1; will continue S&M at Linde site.
	$ 2,656	$ 16,589	$ 8,989
Ventron, MA	Published the characterization report; no remediation activity.	Complete site EE/CA activities; no remediation activity.	No assessment activity; will start remedial design.
	$ 753	$ 905	$ 335
Wayne, NJ	Completed and issued the RI report, the baseline risk assessment, and the FS-EIS/PP; began preparation of the draft ROD.	Complete the site ROD; initiate cell treatment testing demonstration (off-site).	No assessment activity.
	Continued site S&M; completed vicinity property cleanup.	Initiate and complete the certification docket for vicinity property remedial action; continue site S&M; initiate building decontamination; complete Phase I remedial design.	Will initiate implementation of remedy at Wayne; will continue building decontamination; will continue site S&M.
	$ 3,495	$ 4,163	$ 6,080
W.R. Grace, MD	No activity.	No activity.	Will initiate site characterization.
	$ 0	$ 0	$ 1,240
Formerly Utilized Sites Remedial Action Project (FUSRAP)	$ 41,485	$ 74,100	$ 85,200

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL RESTORATION

1. Preface: Uranium Mill Tailings Remedial Action Project (UMTRAP)

Public Law 95-604, "The Uranium Mill Tailings Radiation Control Act of 1978," authorizes the Department of Energy (DOE) to conduct a mill tailings stabilization and control program at 24 sites and an estimated 5,000 associated vicinity properties. The Environmental Protection Agency (EPA) is responsible for establishing standards governing the stabilization, control, and remediation of the tailings; and the Nuclear Regulatory Commission (NRC) provides consultation and concurrence in the selection and performance of the remedial action at each site. The remedial action is conducted in accordance with cooperative agreements negotiated with the affected State or Indian Tribe under whose jurisdiction a site is located. UMTRAP is a cost-shared project with the Federal Government (DOE) paying 90 percent of the remedial action cost and the States paying 10 percent. When the sites are on Indian lands, DOE pays the entire cost of the remedial action. The project is designated a Major System Acquisition by DOE. For additional details on schedules and other site specific information, please refer to the consolidated UMTRAP Operating Expense Funded Data Sheet included with this submission.

Project implementation is based on site priorities established by a health effects analysis, on maintaining a relatively constant budget profile, and on optimizing overall project management. The objective of the remedial action at the processing sites is to provide long-term environmental and public health and safety protection by either stabilizing the tailings on-site where feasible or removing the tailings to a new disposal site. Contaminated materials removed from the vicinity properties are disposed of with the processing site tailings. The final disposal site will be Federally (DOE) owned and maintained under a license issued by the NRC.

Under Public Law 95-604, the Department's authority to perform remedial action on tailings was to terminate seven years after the EPA promulgated remedial action standards, unless that termination date was specifically extended by subsequent statute. EPA's standards became effective on March 7, 1983. Public Law 100-616, the "Uranium Mill Tailings Remedial Action Amendments Act of 1988," extended the period of authorization for conducting remedial action until the end of FY 1994. Legislation was introduced and approved which further extended the period to carry out remedial action until the end of FY 1996. An additional extension will be required based on this budget request and associated outyear budget planning levels. The specific impacts and schedule revisions are being assessed, and a legislative extension to the end of FY 1998 will be requested by the Department.

To provide maximum flexibility, all activities are budgeted under operating expenses and include capital equipment and construction-type activities. This is consistent with the manner in which Environmental Restoration activities were budgeted and approved by Congress in previous years.

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ACRONYMS

DOE	Department of Energy
EPA	Environmental Protection Agency
LTSM	Long-Term Surveillance and Maintenance
NRC	Nuclear Regulatory Commission
S&M	Surveillance and Maintenance
UMTRAP	Uranium Mill Tailings Remedial Action Project

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II. A. Summary Table: Uranium Mill Tailings Remedial Action Project (UMTRAP)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Ambrosia Lake, NM	$ 8,202	$ 2,415	$ 409	$ -2,006
Belfield/Bowman, ND	657	146	21,573	21,427
Canonsburg, PA	89	0	0	0
Durango, CO	424	62	0	-62
Falls City, TX	5,095	1,629	296	-1,333
Grand Junction, CO	11,190	15,331	21,406	6,075
Green River, UT	275	0	0	0
Gunnison, CO	5,018	4,239	1,821	-2,418
Lakeview, OR	93	69	0	-69
Lowman, ID	141	0	0	0
Maybell, CO	741	12,400	10,116	-2,284
Mexican Hat, UT	8,764	3,059	464	-2,595
Monument Valley, AZ	1,502	701	0	-701
Naturita, CO	8,311	14,585	7,658	-6,927
Rifle, CO	12,887	21,843	6,027	-15,816
Riverton, WY	8	0	0	0
Salt Lake City, UT	128	531	0	-531
Shiprock, NM	117	90	0	-90
Slick Rock, CO	1,358	10,981	10,230	-751
Tuba City, AZ	242	36	0	-36
Headquarters	29,000	0	0	0
Total, Uranium Mill Tailings Remedial Action Project (UMTRAP)	$ 94,242	$ 88,117	$ 80,000	$ -8,117

II. B. Laboratory and Facility funding Table: Uranium Mill Tailings Remedial Action Project (UMTRAP)

Albuquerque Operations Office	$ 94,242	$ 93,900	$ 80,000	$ -13,900
All Other	0	-5,783	0	5,783
Total, Uranium Mill Tailings Remedial Action Action Project (UMTRAP)	$ 94,242	$ 88,117	$ 80,000	$ -8,117

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Uranium Mill Tailings Remedial Action Project (UMTRAP)			
Ambrosia Lake, NM	Monitored site remediation; completed 95 percent of site remedial action.	Monitor site remediation; complete 100 percent of site remedial action; initiate site completion report.	Will initiate interim S&M and site certification efforts.
	$ 8,202	$ 2,415	$ 409
Belfield/Bowman, ND	Completed the site environmental documentation and the Remedial Action Plan; no remediation activity.	Monitor the site and perform pre-construction activities; initiate site pre-construction activities in preparation for remedial action start in FY 1996.	Will monitor site remediation; will initiate and complete 90 percent of site remedial action.
	$ 657	$ 146	$ 21,573
Canonsburg, PA	Completed interim S&M, site certification, and site licensing activities.	Transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.	No activity.
	$ 89	$ 0	$ 0
Durango, CO	Continued interim S&M, site certiciation, and site licensing activities.	Complete site certification and NRC licensing. Transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.	No activity.
	$ 424	$ 62	$ 0

III. Uranium Mill Tailings Remedial Action Project (UMTRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Falls City, TX	Monitored site remediation; completed 100 percent of site remedial action.	Initiate site certification activities; finalize site completion report.	Will complete site certification and site licensing; will transfer site responsibility to LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.
	$ 5,095	$ 1,629	$ 296
Grand Junction, CO	Monitored site remediation.	Monitor site remediation.	Will monitor site remediation.
	Maintained and operated disposal cell with 99 percent of site remedial action completed; completed remedial action at 19 additional vicinity properties; initiated remedial action at commingled properties.	New Budget Authority and prior-year carryover funding will be utilized to maintain and operate disposal cell with 99 percent of site remedial action completed; complete remedial action at 26 additional vicinity properties, including commingled properties.	Will maintain and operate disposal cell with 99 percent of site remediation completed; will complete remedial action at 52 additional vicinity properties including commingled properties.
	$ 11,190	$ 15,331	$ 21,406
Green River, UT	Completed interim S&M; completed site certification; and initiated and completed licensing efforts.	Transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.	No activity.
	$ 275	$ 0	$ 0
Gunnison, CO	Monitored site remediation.	Monitor site remediation.	Will monitor site remediation.
	Completed 86 percent of site remedial action; completed installation of alternative water supply system; completed 100 percent of vicinity property remedial action efforts.	Complete 97 percent of site remedial action.	Will complete 100 percent of site remedial action.
	$ 5,018	$ 4,239	$ 1,821

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III. Uranium Mill Tailings Remedial Action Project (UMTRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lakeview, OR	Initiated site licensing.	Complete site licensing.	Will transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.
	$ 93	$ 69	$ 0
Lowman, ID	Continued interim S&M; initiated site certification efforts; completed site certification and licensing.	Transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.	No activity.
	$ 141	$ 0	$ 0
Maybell, CO	Completed site environmental documentation and the Remedial Action Plan.	Monitor the site and perform pre-construction activities.	Will monitor site remediation.
	Completed site acquisition activities.	Initiate and complete 40 percent of site remedial action and all six vicinity property remedial actions.	Will complete 89 percent of site remedial action.
	$ 741	$ 12,400	$ 10,116
Mexican Hat, UT	Monitored site remediation; completed 98 percent of site remedial action; received remainder of tailings from the Monument Valley, AZ site.	Monitor site remediation; complete 100 percent of site remedial action.	Will initiate interim S&M and site certification activities; will finalize site completion report.
	$ 8,764	$ 3,059	$ 464
Monument Valley, AZ	Initiated site certification efforts and interim S&M; completed 100 percent of site remedial action.	Continue interim S&M; prepare site remedial action completion report; remediation complete.	No activity.
	$ 1,502	$ 701	$ 0

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III. Uranium Mill Tailings Remedial Action Project (UMTRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Naturita, CO	Completed site environmental documentation and the Remedial Action Plan.	Monitor site remediation.	Will monitor site remediation.
	Initiated and completed 28 percent of site remedial action; initiated and completed 60 percent of vicinity property remedial action (18 properties).	Complete 73 percent of site remedial aciton; complete 100 percent of vicinity property remedial action (32 properties).	Will complete 100 percent of site remedial action.
	$ 8,311	$ 14,585	$ 7,658
Rifle, CO	Monitored site remediation.	Monitor site remediation.	Will monitor site remediation.
	Completed 64 percent of site remedial action; completed 100 percent of vicinity property remedial action.	Complete 93 percent of site remedial action.	Will complete 100 percent of site remediation.
	$ 12,887	$ 21,843	$ 6,027
Riverton, WY	Completed site certification.	No activity.	No activity.
	$ 8	$ 0	$ 0
Salt Lake City, UT	Prepared disposal site completion report.	Complete interim S&M and site certification efforts; initiate and complete licensing activities.	Will transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.
	$ 128	$ 531	$ 0
Shiprock, NM	Continued interim S&M.	Complete licensing efforts.	Will transfer site responsibility to DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.
	$ 117	$ 90	$ 0

III. Uranium Mill Tailings Remedial Action Project (UMTRAP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Slick Rock, CO	Completed site environmental documentation and the Remedial Action Plan.	Monitor site remediation.	Will monitor site remediation.
	Continued site final design efforts.	Initiate and complete 62 percent of site remedial action; initiate and complete 100 percent of vicinity property remedial action; complete site final design efforts.	Will complete 100 percent of site remediation.
	$ 1,358	$ 10,981	$ 10,230
Tuba City, AZ	Completed site certification and site licensing efforts; continued site S&M.	Transfer site responsibility to the DOE LTSM Program under the Non-Defense Environmental Restoration Facilities and Sites budget activity.	No activity.
	$ 242	$ 36	$ 0
Headquarters	Funding held for high priority efforts currently being assessed by the Department.	No activity.	No activity.
	$ 29,000	$ 0	$ 0
Uranium Mill Tailings Remedial Action Project (UMTRAP)	$ 94,242	$ 88,117	$ 80,000

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL RESTORATION

I. Preface: Uranium Mill Tailings Remedial Action Groundwater Project

The goal of the Uranium Mill Tailings Remedial Action Groundwater Project is for groundwater at 24 designated uranium mill tailings sites to comply with Environmental Protection Agency (EPA) groundwater protection standards. The EPA is responsible for establishing standards to govern the cleanup of the groundwater in the vicinity of the tailings processing sites. The groundwater protection standards of 40 CFR 192.2 were remanded to the EPA in 1985 because the standards were site- specific rather than applying generally to all. The EPA issued draft final groundwater protection standards on September 24, 1987. The project is using these standards until final standards are issued. FY 1991 was the first year funding was requested for this Project.

This project will carry out additional characterization and restoration efforts not covered by UMTRAP described elsewhere in this submission. It is being budgeted as a separate category since the UMTRAP activity has a well defined scope, schedule, and approved Total Estimated Cost. This activity is designated a Major Project by the Department. Like UMTRAP, the project is authorized by Public Law 95-604, the "Uranium Mill Tailings Radiation Control Act of 1978." Public Law 100-616, the "Uranium Mill Tailings Remedial Action Amendments Act of 1988," authorized an unlimited time period for conducting groundwater compliance activities. The Federal Government (Department of Energy (DOE)) will pay 90 percent of the remedial action cost and the States will pay 10 percent. When the sites are on Indian lands, DOE is responsible for the entire cost of the compliance activity.

For additional details on schedules and other site specific information, please refer to the detailed groundwater restoration Operating Expense Funded Data Sheet included with this submission. To provide maximum flexibility, all activities are budgeted under operating expenses and include capital equipment and construction-type activities. This is consistent with the manner in which Environmental Restoration activities were budgeted and approved by Congress in previous years.

II. A. Summary Table: Uranium Mill Tailings Remedial Action Groundwater Project

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Assessment / Remediation Activities	$ 6,794	$ 7,000	$ 7,800	$ 800
Total, Uranium Mill Tailings Remedial Action Groundwater Project	$ 6,794	$ 7,000	$ 7,800	$ 800

II. B. Laboratory and Facility Funding Table: Uranium Mill Tailings Remedial Action Groundwater Project

Albuquerque Operations Office	$ 6,794	$ 7,000	$ 7,800	$ 800
Total, Uranium Mill Tailings Remedial Action Action Groundwater Project	$ 6,794	$ 7,000	$ 7,800	$ 800

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Uranium Mill Tailings Remedial Action Groundwater Project			
Assessment / Remediation Activities	Continued Programmatic Environmental Impact Statement (PEIS) activities; initiated detailed site characterization and NEPA efforts at one site; initiated and completed baseline risk site characaterization activities at 10 sites; supported development of Baseline Risk Assessments; completed Site Observational Work Plan (SOWP) for one site.	Publish PEIS and ROD; continue detailed site characterization at one site to support remedial action start in FY 1996; complete 10 Baseline Risk Assessments; initiate SOWPs for two sites; initiate detailed site characterization at two sites.	Will continue detailed site characterization at three sites; will initiate detailed site characterization at one site; will initiate compliance strategy at first site.
	$ 6,794	$ 7,000	$ 7,800
Uranium Mill Tailings Remedial Action Groundwater Project	$ 6,794	$ 7,000	$ 7,800

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
Environmental Restoration (Non-Defense)
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Operative Expense Funded Project Summary

Project Title	Previous Oblig	FY 1994 Approp	FY 1995 Approp	FY 1996 Request	Cost Estimate [a]
Albuquerque Laboratory Environmental Restoration Project	$ 12,452	$ 3,208	$ 3,313	$ 1,638	$ 27,163
Albuquerque Production Environmental Restoration Project	21,443	3	1,736	1,223	29,297
Uranium Mill Tailings Remedial Action Project	1,067,297	65,242 [b]	88,117	80,000	1,367,223[c]
Uranium Mill Tailings Remedial Action Groundwater Project	7,590	6,794	7,000	7,800	533,964[c]
Grand Junction Projects Office	64,832	28,534	36,396	50,869	384,107
Chicago Laboratories Environmental Restoration Project	62,262	29,567	24,820	32,115	277,224
Battelle Columbus Laboratories Decommissioning Project	38,371	15,230	17,350	16,006	150,981
Oak Ridge Field Office	75,303	79,072	47,005	41,706	409,910
Weldon Spring Site Remedial Action Project	173,542	39,702	53,198	67,500	603,942[d]
Formerly Utilized Sites Remedial Action Project	304,294	41,485	74,100	85,200	1,062,728
Oakland Environmental Restoration Project	49,221	18,037	16,987	16,887	168,680
Savannah River Site Environmental Restoration Project	570	271	292	4,300	22,633
TOTAL, Environmental Restoration (Non-Defense)	$1,877,177	$327,145	$370,314	$405,244	$5,037,852

[a]Current Cost Estimate reflects estimate through FY 2000 only, except where otherwise noted.

[b]$29,000,000 is not included; funding is being held for higher-priority efforts currently being assessed by the Department.

[c]Cost Estimate reflects estimate through completion.

[d]Current cost estimate through FY 2003.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

WASTE MANAGEMENT (NON-DEFENSE)

I. INTRODUCTION

Since the beginning of the Nuclear Age, the Department of Energy and its predecessors, the Energy Research and Development Administration and the Atomic Energy Commission, have been producing radioactive waste from research and development activities. Those activities produced large quantities of waste; and its disposition was of lesser importance than the research and development mission. As a result, waste was stored or disposed of in a manner which does not meet today's more conservative regulatory requirements. Much of the waste contains radioactive constituents, hazardous chemical constituents, or both.

II. MISSION

The mission of the Waste Management Program is to protect people and the environment from the hazards produced by the waste by providing an effective and efficient system to minimize, treat, store and dispose of the waste as soon as possible. To support this mission, DOE has developed strategies to treat, store and dispose waste. These strategies are being developed by waste type since similar types of waste may be managed in a similar manner. For example, high-level waste (HLW) requires shielding and remote handling, whether it is stored in tanks at Savannah River, South Carolina or West Valley, New York. Other waste type strategies presented here include low-level waste (LLW), transuranic waste (TRU), hazardous waste (HAZ), sanitary waste (SAN) and mixed waste. DOE's spent nuclear fuel is a material requiring special management and handling because of its high radioactive content. Strategic, long-range plans for managing each waste type and spent fuel are in development to provide a basis for integrated planning across the DOE waste management complex. A detailed data base provides quantitative information by waste type concerning the magnitude of the DOE waste management challenge.

III. GOALS

In FY 1996, the Waste Management Program will continue to protect the public and worker health and safety. The Program will also protect the environment from damage from radioactive and hazardous waste. And the Program will continue to make progress on reducing long-term risk by treating waste with the goal of ultimate disposal.

The FY 1996 request for the Waste Management Program (Non-Defense) has been reduced by approximately 15 percent from the FY 1995 Appropriation. At the same time, requirements have increased by about 10 percent. Our plan to meet the challenge of doing more with less has been, and will be, accomplished by focusing on essential activities needed to meet our goals and by reducing infrastructure and overhead costs. There is also a significantly higher degree of risk that some requirements may not be met on time. The Department believes this risk is acceptable in order to meet our cost reduction goals.

The Department will continue to work in partnership with our regulators and stakeholders to prioritize activities and find new approaches to the problems we face in order to reduce costs. The FY 1996 request was developed assuming that, for certain activities, a more cost-effective approach can be developed in cooperation with our regulators. In other areas, the Department is exploring privatizing parts or all of its effort to reduce costs. Where practical, the Department will place a higher priority on activities that reduce risk.

The Waste Management Program has, as its goals, the following major accomplishments planned for FY 1996:

- Start up the West Valley Demonstration Project in January, 1996;

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- Privatize operations where economic efficiencies clearly warrant such action;
- Improve safety of spent nuclear fuel storage at Idaho;
- Implement Site Treatment Plans as negotiated through the Federal Facility Compliance Act process;
- Provide waste management services to Departmental programs;
- Promote waste minimization efforts in all Departmental operations.

IV. WASTE TYPE STRATEGY

The following outlines the strategy, benefits, and planned accomplishments of each of the seven types of waste this program manages:

High-Level Waste

The long term objective in the management of high-level waste is to dispose of the waste in a deep geologic repository. The Waste Management Program supports activities by other DOE organizations to assure a geologic repository is completed. Near-term goals for the Waste Management Program include solidifying liquid high-level waste through commencement of hot operations of the West Valley Demonstration Project in New York, which will be stored awaiting the opening of a geologic repository for disposal. The benefits of this program include getting the high-level waste into a more stable form suited for long-term storage, demonstrating the capabilities of vitrifying high-level waste, and providing operating experience to other DOE sites to improve their designs for vitrification facilities, as needed. The past year's achievements include preparation for vitrification operations at West Valley.

Spent Nuclear Fuel

There is no spent nuclear fuel directly managed by the Environmental Management Program in the Energy Supply, Research and Development budget. However, there are two related spent nuclear fuel activities. There are 125 spent fuel assemblies located at West Valley managed by the Office of Civilian Radioactive Waste Management; and there is a Dry Cask Storage Demonstration project for Three Mile Island-II fuel and debris being constructed in Idaho.

Transuranic Waste

Transuranic waste (TRU) is radioactive waste containing more than 100 nanocuries per gram of alpha-emitting isotopes with atomic numbers greater than 92 and half-lives greater than 20 years. This waste is the result of fuel reprocessing or other research and development activities. For some TRU waste, little or no shielding is required; this is referred to as "contact-handled" TRU waste. On the other hand, there are TRU radionuclides which require shielding because of their gamma or neutron emissions. These are referred to as "remote-handled" TRU waste. There is about 104,000 cubic meters of contact handled TRU waste and about 2,000 cubic meters of remote handled. This volume represents about 1,850,000 curies. There are six major sites and ten lesser sites where TRU waste is stored pending development of a disposal capability.

It should also be noted, prior to 1970 TRU waste was considered low-level waste and disposed through burial. At that time it was realized that greater confinement from the environment was needed. Since that time, TRU waste has been segregated from other radioactive waste and placed in retrievable storage. The pre-1970 waste is referred to as "buried" TRU and is managed by the Environmental Restoration Program. Retrievably stored waste is managed by the Waste Management Program.

Relatively small amounts of TRU are stored at West Valley, whose 550 cubic meters is the largest concentration of non-defense TRU waste. The West Valley TRU represents about 50 curies of radioactivity. Other non-defense sites store less than 100 cubic meters of TRU waste in total. The most pressing problem with non-defense TRU continues to be where this waste will be disposed. Because the volume of waste is generally small, it is not economically feasible at this time to build a separate facility similar to the Waste Isolation Pilot Plant (WIPP) for disposal of non-defense TRU waste. However, legislation precludes disposal of the non-defense generated TRU waste at WIPP.

The near term goal is to keep the waste in safe storage until a decision is made regarding disposal of non-defense TRU. The long-term goal is to make the decision regarding the disposal of this waste and then begin implementation of that decision. The benefits of these actions allow continued safe storage and yet brings about resolution of the issue. The past year's achievements include continued safe storage of this waste at all sites.

Low-Level Waste

Low-level waste (LLW) is defined as any radioactive waste which is not high-level, transuranic, spent fuel or mill tailings. The Waste Management Program is responsible for the disposal of low-level waste from non-defense funded facilities, and for the operation of the National Low-Level Waste Program. The goal of the National LLW Program is to facilitate the establishment of a reliable nationwide system for management of commercially generated low-level radioactive waste by implementing responsibilities assigned to DOE under Public Law 99-240, "Title I Low-Level Radioactive Waste Policy Amendments Act of 1985." The Act assigned to States the responsibility for providing, either individually or in cooperation with other States, disposal of LLW generated within their borders. Responsibilities assigned to DOE by the Act include technical and financial assistance to compacts and States in meeting their responsibilities, annual reporting to the Congress on progress being made by States on low-level waste management in the U.S., certain administrative and financial functions, and disposal of greater-than-class C low level waste resulting from activities of licensed generators. The National Low-Level Waste Program will continue to provide technical assistance to States and compact regions by facilitating information exchange through the Host State Technical Coordinating Committee, the LLW Forum, and the Annual DOE LLW Management Conference; preparing technical modules and reports on LLW management issues of interest to the States; providing workshops, performance assessment assistance, liaison services, and assistance with State-specific requests; and providing data systems support.

The Program will also continue to manage the surcharge rebate process and prepare the reports required by the Act. The Greater-Than-Class-C (GTCC) Low-Level Radioactive Waste Program will continue to plan and develop storage and disposal capability for GTCC LLW to meet specific DOE responsibility under the Act. Interim storage can be provided on an urgent case-by-case basis for GTCC LLW that poses an immediate threat to public health. Dedicated storage, capability will be developed as required for long-term storage until disposal is feasible.

The benefits of this program include safe storage and disposal of DOE waste and safe storage of commercially generated waste until disposal options are identified and implemented. Significant activities from the past year include publication of policy and procedures concerning rebates to States or compacts in accordance with milestones established in Public Law 99-240 and routine disposal of low-level waste from DOE research and development facilities.

Mixed Waste

This category of waste is, by far, the largest volume of waste currently managed by the Waste Management Program. Mixed waste consists of waste containing both hazardous (as defined by RCRA) and radioactive (as defined by AEA) components and may be high-level, low-level or TRU mixed waste. Low-level mixed waste represents about one-third of the volume of mixed waste. The ultimate long-term goal is to dispose of this waste. Exact dates for completion cannot be given at present, but it is expected that several new treatment or storage facilities will be needed before adequate disposal can be provided. The mixed waste program is currently being driven by the Federal Facility Compliance Act.

The Federal Facility Compliance Act (FFCAct), passed in October 1992, waived sovereign immunity for Federal agencies from fines and penalties for land disposal storage violations. However, the Act does allow a three-year delay until the imposition of fines and penalties for certain violations related to DOE's storage of mixed waste; this three-year delay expires on October 6, 1995. During that time, the Act requires the Secretary of Energy to develop and submit Site Treatment Plans to the regulating agency (either the State or Environmental Protection Agency) for the development of treatment capacity and technologies for treating mixed waste. According to the Draft Site Treatment Plans issued in August 1994, there is approximately 800,000 cubic meters of mixed waste in inventory and projected to be generated within the next five years.

DOE is continuing to work with the States, Environmental Protection Agency (EPA), Indian Tribes, and stakeholders through the Federal Facility Compliance

act process and other mechanisms to develop a national configuration of mixed waste treatment facilities. It is expected that by the end of March 1995, but in no event later than April 6, 1995, 48 Proposed Site Treatment Plans will be submitted to the regulatory agencies. Those agencies will then make them available for public review and comment, and will continue to work with DOE toward issuing 48 Compliance Orders by October 1995.

The past year's achievements include the preparation and submission of 48 Conceptual Site Treatment Plans. In August 1994, the Draft Site Treatment Plans were submitted to the States and EPA and were made available to the public. During FY 1994 site and national level discussions were held. These will continue during FY 1995. It is expected that by the end of March 1995, the proposed Site Treatment Plans will be submitted and will be the focus of discussions and negotiations with States/EPA and other stakeholders as part of the FFCAct process. Discussions with the States, EPA, tribes, and stakeholders will continue during FY 1996 and modifications to the Site Treatment Plans and Compliance Orders will occur, either as the result of these discussions, or as new information and technology develops.

Hazardous and Sanitary Waste

Hazardous waste is the waste which is defined as hazardous by the Resource Conservation and Recovery Act (RCRA). It consists of waste which, because of its concentration or physical or chemical characteristics, may cause or contribute to mortality or illness or pose a substantial threat if not properly managed. The most common hazardous wastes generated by DOE include spent solvents, corrosives, ignitables, metals, specialty chemicals used by research and development laboratories, explosives, PCBs and asbestos. Hazardous waste can be harmful to humans by chemically or physically attacking skeletal, nervous or other bodily systems. In many ways hazardous waste is more difficult to deal with than radioactive waste because chemicals in waste may have an unknown synergistic effect and exposure cannot be easily monitored.

Sanitary waste is office waste, cafeteria waste, sewage, sewage sludges, plastic, wood, rubber, rags and similar materials. The solid sanitary waste is disposed in approved sanitary landfills, and liquid sanitary waste is treated in wastewater treatment facilities prior to discharge in receiving streams. The near and long-term goals for both of these waste types is the same. The goal is to maintain environmental compliance while at the same time disposing of waste as it is generated. DOE uses both on-site and off-site disposal facilities for its hazardous waste and sanitary waste.

Three non-defense facilities appear on a list of the 10 largest hazardous waste generators: the Stanford Linear Accelerator Center, Argonne National Laboratory-East and the Energy Technology Engineering Center. Together, these sites represent about 10 million kilograms of waste shipped between 1984 and 1991. As shown in the budget request, the Waste Management Program is providing increased storage, treatment or disposal capacity due to known increased need or to replace existing facilities which have reached the end of their design life. The past year's achievements include routine compliant treatment storage and disposal of hazardous and sanitary waste at non-defense sites, commencement of stormwater characterization work at Argonne National Laboratory-East and continued development of robust effective waste management programs at sites such as the Stanford Linear Accelerator Center and the Energy Technology Engineering Center.

V. DESCRIPTION AND BUDGET OF PROGRAM BY OPERATIONS OFFICE

The Waste Management Program manages its activities through a series of regional offices which were formed to complete specific missions. Richland, Idaho, Savannah River and Oak Ridge were established to provide nuclear weapons materials and components. Other offices were formed in conjunction with the National Laboratories to provide a research and development capability in the areas of weapons development, energy production or biomedical research. The weapons facilities were the primary generators of high-level, transuranic waste and spent nuclear fuel. They also produced large volumes of low-level, mixed and hazardous waste. The National Laboratories, on the other hand, generated a wide variety, and generally small volumes, of waste which are mostly mixed low-level or hazardous in nature. The difficulty associated with the waste generated from the laboratories is associated with the characterization, monitoring, and storage of these numerous waste streams. The following describes the major waste activities with the operations offices.

Albuquerque

The Albuquerque Operations Office has only one site funded in the Energy Supply, Research and Development Appropriation: the Inhalation Toxicology Research Institute (ITRI). ITRI conducts studies on the health effects of inhaling potentially hazardous airborne materials. The studies may include

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radioactive material, insulating materials, diesel exhaust emissions or other substances from energy production or conservation technologies. The research activities produce very small amounts of biomedical, transuranic, mixed, low-level, hazardous and sanitary waste.

Like the rest of the non-defense laboratories, ITRI generates only small volumes of waste. Historically, its waste management program lacked credibility for a variety of reasons and establishment of such a program has been a priority for the past several years. In this regard, ITRI has been successful because almost all waste types are now managed, to the extent possible under environmental regulations, as they are generated. The uncertainties associated with the FFCAct process are the most serious concern of this program.

TOTAL FUNDING BY INSTALLATION - ALBUQUERQUE
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
Inhalation Toxicology Research Institute-New Mexico	496	675	630
TOTAL	496	675	630

Chicago

The Chicago Operations Office manages six sites: Ames Laboratory-Iowa, Argonne National Laboratory-East-Illinois, Argonne National Laboratory-West-Idaho, Brookhaven National Laboratory-New York, Fermi National Accelerator Laboratory-Illinois and the Princeton Plasma Physics Laboratory-New Jersey. These six facilities are laboratories devoted to fundamental and applied research in high energy physics, energy production from fusion and biological and medical research. The main types of waste associated with these facilities are low-level, mixed low-level, hazardous and sanitary wastes. The Chicago sites generate annually about 1,400 cubic meters of low-level waste and about 200 cubic meters of mixed low-level waste. In comparison to other Operations Offices, these are small volumes, but they require the same effort to maintain compliance as larger sites do. In the past, small Operations Offices, such as Chicago, received little support to establish quality waste management programs. Over the past five years sufficient funding and support was received to meet the short-term goal of establishing compliant programs. The past year's achievements include routine shipment and compliant disposal of hazardous waste at approved facilities at all sites and routinely shipped low-level waste for disposal at Richland.

TOTAL FUNDING BY INSTALLATION - CHICAGO
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
Ames Laboratory-Iowa	618	670	385
Argonne National Laboratory-East-Illinois	15,263	16,144	13,144
Argonne National Laboratory-West-Idaho	2,933	3,410	3,586
Brookhaven National Laboratory-New York	11,778	11,202	7,521
Fermilab-Illinois	3,547	5,020	2,751
Princeton Plasma Physics Laboratory-New Jersey	6,391	7,918	5,064
Chicago Operations Office-Illinois	286	128	2,549
TOTAL	40,816	44,492	35,000

Idaho

The Idaho Operations Office has one ongoing non-defense funded activity to provide dry storage for Three Mile Island-II core debris and other DOE owned commercial spent fuel that EM does not manage. The Dry Cask Storage Project will provide interim, dry storage of all fuel-bearing materials currently in the Test Area North Hot Shop Pool. The FY 1996 funding will initiate construction activities of the facilities that will store spent nuclear fuel and debris in a dry environment rather than pools. The new storage facility (located at the Idaho Chemical Processing Plant) will be safer than the existing storage facility and provide interim storage until a geologic repository is available.

TOTAL FUNDING BY INSTALLATION - IDAHO
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
Idaho Chemical Processing Plant-Idaho	16,359	12,953	11,183
TOTAL	16,359	12,953	11,183

Oakland

The Oakland Office, formerly referred to as the San Francisco Operations Office, manages waste operations at the Laboratory for Energy-Related Health Research (LEHR), Lawrence Berkeley Laboratory (LBL), Lawrence Livermore National Laboratory (LLNL), the Energy Technology Engineering Center (ETEC), and the Stanford Linear Accelerator Center (SLAC). The laboratories perform research in health effects of radiation exposure, energy research and high energy particle physics. The sites generate small volumes of radioactive, hazardous and sanitary waste.

For a variety of reasons, the establishment and maintenance of a rigorous, compliant waste management program has been and continues to be the major issue facing these small sites. The ability of these sites to manage their waste is further challenged by the fact they produce a large number of small volume waste streams. The characterization, monitoring and other environmental requirements are the same whether a waste stream contains one or ten or 100,000 cubic meters. These facilities tend to have numerous waste streams because of the experiments they conduct. In addition, these sites have an additionally difficult time managing hazardous waste because the State of California has an expanded list of chemicals it considers to be hazardous. As a result, more material must be classified as hazardous waste than RCRA would require. This contributes to an increase in the cost of managing the waste. In the past year, however, the sites maintained compliance in the storage and disposal of wastes that were shipped off-site.

A major non-defense planned accomplishment for FY 1996 is to complete operational testing and begin operation of the Hazardous Waste Handling Facility at Lawrence Berkeley Laboratory.

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TOTAL FUNDING BY INSTALLATION - OAKLAND
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
ETEC Field Laboratory-California	2,120	4,380	3,063
Lawrence Berkeley Laboratory-California	14,030	9,980	7,473
Oakland Operations Office-California	0	500	753
Stanford Linear Accelerator Center-California	4,365	5,289	3,893
TOTAL	20,515	20,149	15,182

Oak Ridge

The Oak Ridge National Laboratory (ORNL) waste management program is primarily responsible for hazardous and sanitary wastes, although research and development activities do create low-level waste as well. The biggest issue facing ORNL with these waste-types is attaining compliance for sewer systems and the collection and transfer system for low-level waste at both Melton Valley and Bethel Valley. The Melton Valley collection and transfer system is scheduled for completion in FY 1996, while the project in Bethel Valley is scheduled for completion in FY 1997. The benefits of these activities include compliant routine management of hazardous and sanitary waste.

TOTAL FUNDING BY INSTALLATION - OAK RIDGE
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
Oak Ridge National Laboratory-Tennessee	27,863	24,805	9,686
TOTAL	27,863	24,805	9,686

West Valley Demonstration Project

The West Valley Demonstration Project (WVDP) is located at the Western New York Nuclear Service Center near West Valley, New York. The Center reprocessed spent nuclear fuel from 1966 to 1972. The purpose of the project is to demonstrate an integrated production scale project to vitrify 660,000 gallons of high-level waste. The most significant milestone is the commencement of vitrification operations currently scheduled for FY 1996 and completion of Phase I in 1998. The benefits of this project include placing this liquid waste form into a more stable solid waste form amenable to long term storage pending development of a geologic repository. It also provides valuable operating data for the design of other vitrification facilities which may be needed throughout the complex. Finally, it brings the waste closer to compliant disposal.

TOTAL FUNDING BY INSTALLATION - WEST VALLEY DEMONSTRATION PROJECT
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
West Valley Demonstration Project-New York	120,346	125,127	122,100
TOTAL	120,346	125,127	122,100

Richland

The Battelle Memorial Institute provides science and technology laboratory services to the Hanford Site at Pacific Northwest Laboratory (PNL). Other activities at PNL include the storage of spent nuclear fuel research specimens, awaiting final disposition. Hot cells there are used for a variety of radioactive analysis required by on and offsite missions, including cesium and strontium isotope capsules. The FY 1996 funding will continue routine waste management operations and the cleanout and restoration activities of the 324-B Cell. The 324-B cleanout activities includes remote disassembly of highly contaminated equipment and the packaging of highly radioactive debris for storage and disposal.

TOTAL FUNDING BY INSTALLATION - RICHLAND
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. AJUST.	FY 1996 CONGRESSIONAL
Battelle Memorial Institute-Washington	10,374	11,978	12,364
TOTAL	10,374	11,978	12,364

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Waste Management (Non Defense)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Program Management					
Operating Expenses	$ 3,319	$ 4,357	$ -115	$ 4,242	$ 4,193
Facility Operations and Maintenance					
Operating Expenses	$ 64,686	$ 69,827	$ -467	$ 69,360	$ 61,632
Capital Equipment	2,626	2,191	-360	1,831	1,658
Subtotal, Facility Operations and Maintenance	$ 67,312	$ 72,018	$ -827	$ 71,191	$ 63,290
New Facilities					
Operating Expenses	$ 3,620	$ 2,636	$ 0	$ 2,636	$ 2,544
Construction	36,130	32,343	0	32,343	8,018
Subtotal, New Facilities	$ 39,750	$ 34,979	$ 0	$ 34,979	$ 10,562
West Valley Demonstration Project					
Operating Expenses	$ 120,346	$ 127,247	$ -2,120	$ 125,127	$ 122,100
National Low-Level Waste					
Operating Expenses	$ 8,655	$ 9,000	$ -1,523	$ 7,477	$ 6,000
TOTAL	$ 239,382	$ 247,601	$ -4,585	$ 243,016	$ 206,145
Summary					
Operating Expenses	$ 200,626	$ 213,067	$ -4,225	$ 208,842	$ 196,469
Capital Equipment	2,626	2,191	-360	1,831	1,658
Construction	36,130	32,343	0	32,343	8,018
Total Program	$ 239,382	$ 247,601	$ -4,585	$ 243,016	$ 206,145
Staffing (FTEs)	0	0	0	0	0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Waste Management (Non-Defense)

FY 1995 Appropriation	$ 247,601
- Adjustment -	-4,585
FY 1995 Adjusted	$ 243,016
- Transfer -	0
FY 1995 Comparable	$ 243,016
Program Management	
- Eliminates Headquarters non-defense policy and strategic planning funding	-1,839
- Provides for waste minimization training, goal-setting, documentation and reporting activities primarily at Chicago and Oakland	+1,790
Facility Operations and Maintenance	
- Albuquerque - Implement FFCAct Final Site Treatment Plan at Inhalation Toxicology Research Institute; complete disposal of inventory of LLW	-50
- Chicago - Fully fund backlogged LLW waste management program at six laboratories for routine treatment, storage and disposal of hazardous, low-level and mixed wastes, complete repackaging activities to dispose of remaining backlog waste and develop technologies to treat ANL-E's mixed waste streams; BNL will move its entire waste operations to new facilities; complete PCB cleanup of two additional service buildings around FERMI National Accelerator Laboratory's Main Ring Accelerator; and dispose of LLW resulting from dismantling of the Tokamak Fusion Test Reactor at Princeton Plasma Physics Laboratory	+958
- Oakland - Continues waste management program at a reduced level at Stanford Linear Accelerator Center, Energy Technology Engineering Center, Lawrence Berkeley Laboratory, and the Laboratory for Energy-Related Health Research	-4,887
- Oak Ridge - Continue prior year activities at reduced level-of-effort; continue Phase III safety upgrade documentation for the LLW system	-4,308
- Richland - Continue completion of 324-B cell restoration; will continue surveillance and maintenance of 327 Building hot cell complex	+38[illegible]

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SUMMARY OF CHANGES - Waste Management (Non-Defense) (Cont'd)

New Facilities

- Chicago - Decrease reflects complete construction of the Waste Management Facility at Brookhaven National Laboratory (BNL); complete construction of the radioactive waste processing building at FERMI; and complete final design and begin construction of radioactive Waste Handling Facility at Princeton Plasma Physics Laboratory (PPPL); initiate design for Stormwater Detention Cell and begin construction; complete Title I design for Waste Handling Facility at Argonne National Laboratory-West, and initiation of Phase II design for Building 306	-12,871
- Idaho - Decrease reflects the completion of design, fabrication and testing of the canister drying system and beginning operations of the Three Mile Island III Spent Fuel Dry Storage Project	-293
- Oakland - Complete operational testing and Safety Analysis Report requirements for Hazardous Waste Handling Facility at LBL; complete construction of the Sodium Component Handling and Cleaning Facility; and complete construction and testing of new Radioactive and Mixed Waste Storage Facility	-442
- Oak Ridge - Complete construction on two GPPs; complete the East Area Sewer Main and continue program management; and initiate construction of the Bethel Valley FFA project	-10,811

West Valley Demonstration Project

- Test vitrification systems through remote integrated non-radioactive operations; will continue to procure canisters, which will contain the solidified waste	-5,950
- Increase related to level of plant and facility repairs and maintenance necessary with radioactive startup of the project	+2,400
- Provide escalation increase for project support activities, such as public information, quality assurance, project control, and safety	+5,900
- Continue management of radioactive mixed waste and other processes and facilities in support of radioactive operations; continue operation of the size Reduction Facility and Supercompactor	+3,470
- Reduction reflects completion of Final Environmental Impact Statement and deferral of various Phase III engineering activities	-8,847

National Low-Level Waste

- Continue at a reduced level-of-effort technical assistance to States and compacts as required under P.L. 99-240	+300
- Continue administration and reporting activities concerning rebates at FY 1995 level-of-effort	+50
- Continue planning and implementation of selected Greater-Than-Class C low-level waste storage and disposal options	-1,827
Subtotal FY 1996 Congressional Budget Request	$206,145
FY 1996 CONGRESSIONAL Budget Request	$206,145

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Waste Management (Non-Defense)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Inhalation Toxicology Research Institute	$ 496	$ 675	$ 0	$ 675	$ 630
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (West)	$ 2,933	$ 3,410	$ 0	$ 3,410	$ 3,586
Brookhaven National Lab	11,778	11,202	0	11,202	7,521
Argonne National Lab (East)	15,263	16,144	0	16,144	13,144
Ames Lab	618	670	0	670	385
Princeton Plasma Physics Lab	6,391	7,918	0	7,918	5,044
Fermi National Accelerator Lab	3,547	5,020	0	5,020	2,751
Chicago Operations Office	286	128	0	128	2,549
Subtotal, CHICAGO OPERATIONS OFFICE	$ 40,816	$ 44,492	$ 0	$ 44,492	$ 35,000
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 16,359	$ 12,953	$ 0	$ 12,953	$ 11,183
West Valley Project Office	120,346	125,127	0	125,127	122,100
Subtotal, IDAHO OPERATIONS OFFICE	$ 136,705	$ 138,080	$ 0	$ 138,080	$ 133,283
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 27,863	$ 24,805	$ 0	$ 24,805	$ 9,686
RICHLAND OPERATIONS OFFICE					
Hanford Site	$ 10,374	$ 11,978	$ 0	$ 11,978	$ 12,364
OAKLAND OPERATIONS OFFICE					
Energy Technology Engineering Center	$ 2,120	$ 4,380	$ 0	$ 4,380	$ 3,063
Stanford Linear Accelerator Center	4,365	5,289	0	5,289	3,893
Oakland Operations Office	0	500	0	500	753
Lawrence Berkeley Lab	14,030	9,980	0	9,980	7,473
Subtotal, OAKLAND OPERATIONS OFFICE	$ 20,515	$ 20,149	$ 0	$ 20,149	$ 15,182

FIELD OFFICE FUNDING BY SITE - Waste Management (Non-Defense) (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 2,613	$ 2,837	$ 0	$ 2,837	$ 0
ALL OTHER	$ 0	$ 4,585	$ -4,585	$ 0	$ 0
TOTAL	$ 239,382	$ 247,601	$ -4,585	$ 243,016	$ 206,145

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (NON-DEFENSE)

I. Preface: Program Management

The program management budget provides a number of management support activities to the Waste Management Program. The Program Control/Support category includes strategic and long-range planning activities, administrative and technical support services such as office mail and automated equipment, and contractor expertise on Safety and Environmental documentation preparation and review. Also included in program support is funding to cover Federal Facilities Compliance Act and other compliance activities associated with the DOE waste management program. The Waste Minimization category includes support for the DOE-wide and Field Office crosscutting waste minimization programs and those activities in the non-defense Waste Management Program which are aimed at: reducing or eliminating the amount of waste generated; reducing the toxicity of waste produced; recycling potential waste materials in order to reduce costs of waste management; improve worker safety and environmental quality; and comply with applicable Federal and State regulations.

The near-term goal is to have sufficient support and oversight so that no environmental, health or safety non-compliances occur. The benefits include adequate support for management control, planning, cost reviews and identification of environment, safety or health issues which can be dealt with in a reasoned and structured manner. Waste Minimization activities will include awareness training and other programmatic responsibilities to assure waste generation is reduced. The benefits of the Program Management functions are that they help DOE stretch funding resources through waste minimization efforts and attain compliant treatment of mixed waste through the FFCA process.

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II. A. Summary Table: Program Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Program Control/Support	$ 2,899	$ 3,465	$ 1,626	$ -1,839
Waste Minimization	$ 420	$ 777	$ 2,567	$ 1,790
Total, Program Management	$ 3,319	$ 4,242	$ 4,193	$ -49

II. B. Laboratory and Facility Funding Table: Program Management

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Chicago Operations Office	$ 286	$ 128	$ 2,549	$ 2,421
Energy Technology Engineering Center	50	206	226	20
Inhalation Toxicology Research Institute	20	21	26	5
Lawrence Berkeley Lab	150	350	424	74
Oakland Operations Office	0	500	753	253
Stanford Linear Accelerator Center	200	200	215	15
Washington Headquarters	2,613	2,837	0	-2,837
Total, Program Management	$ 3,319	$ 4,242	$ 4,193	$ -49

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Management			
Program Control/Support			
Operating	CHICAGO	CHICAGO	CHICAGO
	No activity. ($0)	No activity. ($0)	Prior years activities funded out of defense segment of the Chicago budget. Will support programmatic reporting, preparation, and submittal of Activity Data Sheets. In addition, will prepare and review development of current year work plans. ($873)
	Continued the prior year groundwater sampling and analysis activities in support of the Agreements-In-Principle (AIP) at Argonne-West including maintenance of the Groundwater Monitoring and Protection Management Plans. ($286)	Activity transferred to Facility Operations and Maintenance under Argonne-West. ($0)	No activity. ($0)
	Activity funded by Headquarters. ($0)	First year that Operations Offices receive funding to comply with administrative requirements of the FFCAct. Complete Site Treatment Plans for Chicago sites as required to comply with FFCAct. ($128)	Activity will be funded out of existing site programs and will continue to comply with requirements of FFCAct. ($0)
	HEADQUARTERS	HEADQUARTERS	HEADQUARTERS
	FEDERAL FACILITY COMPLIANCE ACT IMPLEMENTATION	FEDERAL FACILITY COMPLIANCE ACT - IMPLEMENTATION	FEDERAL FACILITY COMPLIANCE ACT - IMPLEMENTATION
	Continued activities required to satisfy the admininstrative requirements recently enacted by the Federal Facilities Compliance Act (FFCAct). The activities, covered within available funding, included: development of implementation plan and estimation of Headquarters and Operations Office implementation costs.	Provides funding for the administrative activity required to comply with the FFCAct.	Will provide, from prior year funding, the administrative activity required to comply with the FFCAct.

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)			
	Funded National Governors Association and began administrative activities to establish cooperative agreement for next year.	Continue prior year activities.	Will continue prior year activities, using prior year carryover.
	FEDERAL FACILITY COMPLIANCE ACT-INVENTORY REPORTS	FEDERAL FACILITY COMPLIANCE ACT-INVENTORY REPORTS	FEDERAL FACILITY COMPLIANCE ACT-INVENTORY REPORTS
	Responded, as required by the FFCAct, to requests by EPA and the States for additional information. This required establishing an annual inventory report.	Funding will be used to update the inventory report.	Prior year funding will be used to generate an annual update to the inventory report.
	FEDERAL FACILITY COMPLIANCE ACT-SITE TREATMENT PLANS	FEDERAL FACILITY COMPLIANCE ACT-SITE TREATMENT PLANS	FEDERAL FACILITY COMPLIANCE ACT-SITE TREATMENT PLANS
	Developed draft Site Treatment Plans (STPs).	Provide funding for final STPs.	No activity.
	FEDERAL FACILITY COMPLIANCE ACT-COST REIMBURSEMENTS	FEDERAL FACILITY COMPLIANCE ACT-COST REIMBURSEMENTS	FEDERAL FACILITY COMPLIANCE ACT-COST REIMBURSEMENTS
	As required by Section 102 of the FFCAct, funds were provided to several states for nondiscrimanatory charges associated with review of the annual updates to the mixed waste inventory report, review of draft STPs and participation in equity discussions with States.	Continue prior year activities for final site treatment plans.	Will continue prior year activities for final site treatment plans using prior year funds.
	As stipulated by Section 104 of the FFCAct, funds were provided to reimburse EPA for costs incurred during required inspection of DOE facilities.	Continue prior year activities. ($2,837)	Will continue prior year activities using prior year carryover. ($0)
	($2,613)		

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	OAKLAND General support services activities provided by indirect funding. ($0)	OAKLAND Provide direct funding support for contractor services to assist Lawrence Berkeley Laboratory, Energy Technology Engineering Center, Stanford Linear Accelerator Center, and Laboratory for Energy-Related Health Research in specialized technical areas, including cost validation, database system development, budget forecasting, development of Site Specific Plans, long range plans, and other technical evaluations, public meetings, and analytical sampling and testing. ($500)	OAKLAND Will continue to provide support for contractor services as in prior year. The increase will provide for the Baseline Environmental Management Report, multi-year baselines, enhancing Progress Tracking System, and independent cost estimating activities. ($753)
	$2,899	$3,465	$1,626
Subtotal, Program Control/Support	$2,899	$3,465	$1,626
Waste Minimization			
Operating	ALBUQUERQUE INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI) Submitted annual Waste Reduction Report. Installed Chemical Tracking System. Conducted feasibility study of recycling solvent and Histopathology Lab. Implemented bar coding system to track chemical inventory. ($20)	ALBUQUERQUE INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI) Submit annual Waste Reduction Report. Continue Waste Minimization and alternate chemical training for generators. Continue chemical bar coding and inventory. Revise procedures to minimize chemical waste. ($21)	ALBUQUERQUE INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI) Will submit annual Waste Reduction Report. Will issue biannual RCRA report. Will continue chemical bar coding and inventory reduction. Will integrate waste minimization practices into site operating procedures. ($26)

III. Program Management (Cont'd):
Waste Minimization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	CHICAGO	CHICAGO	CHICAGO
	No activity. ($0)	No activity. ($0)	Prior years activity partially funded in defense segment of Chicago budget. Program will be fully funded for the first time in FY 1996. Chicago will develop and deliver information exchange and training seminars on Waste Minimization for use by the Chicago laboratories to aid in employee awareness. Will increase efforts to establish waste reduction goals and emphasize examination of technologies that reduce the volume, hazard, and/or toxicity of the waste form. ($1,676)
	OAKLAND	OAKLAND	OAKLAND
	Maintained the WMin program at SLAC and LBL. Initiated WMin planning efforts and implemented WMin program at Energy Technology Engineering Center (ETEC). Focused of efforts for ETEC, SLAC, and LBL on generator training, education and awareness. ($400)	Continue support to maintain existing Waste Minimization programs at ETEC, SLAC and LBL. Increased efforts will concentrate on meeting additional reporting and documentation requirements, and enhancing existing program. ($756)	Will continue support to maintain existing Waste Minimization programs at ETEC, SLAC and LBL. Increased efforts will concentrate on meeting additional reporting and documentation requirements, and enhancing existing program. ($865)
	$420	$777	$2,567
Subtotal, Waste Minimization	$420	$777	$2,567
Program Management	$3,319	$4,242	$4,193

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (NON-DEFENSE)

1. Preface: Facility Operations and Maintenance

This budget category funds the routine operation and maintenance of treatment and storage facilities for all waste types at non-defense funded facilities. Disposal facilities are not funded in this budget. Waste is either disposed off-site or held in storage pending the opening of disposal facilities such as are needed for high-level and transuranic waste. Facility operations and maintenance includes a comprehensive set of base program activities essential to assure effective and efficient operation of DOE waste management facilities. Examples of activities funded include securing permits and preparation of reports required by environmental regulations, general training and support of technical staff, operation and maintenance of facilities needed to treat High-Level Waste (HLW), Low-Level Waste (LLW), mixed waste, sanitary or hazardous wastes.

Also funded in this account is the operation and maintenance of buildings, warehouses and other storage facilities used to temporarily hold waste pending disposal. Storage facilities are operated at the Inhalation Toxicology Research Institute, Argonne National Laboratory-East, Argonne National Laboratory-West, Fermi National Acceleration Laboratory and the Stanford Linear Accelerator Center. Finally, disposal activities, including disposal fees and costs associated with transportation of waste to disposal sites, are conducted.

Near-term goals for these activities include routine treatment, storage and disposal of all waste types, including reducing the backlog of low-level waste, continuing the PCB cleanup at the Fermi Main Accelerator Ring, which should be completed in FY 1999, and completing 78% of the B-Cell restoration project at Richland. The benefits of these activities are that they provide a compliant treatment, storage and disposal system that protects the health and safety of workers, the public and the environment, while reducing risk and protecting the environment.

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II. A. Summary Table: Facility Operations and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Albuquerque	$ 476	$ 654	$ 604	$ -50
Chicago	$ 30,596	$ 30,195	$ 31,153	$ 958
Oakland	$ 13,899	$ 17,179	$ 12,292	$ -4,887
Oak Ridge	$ 13,714	$ 11,185	$ 6,877	$ -4,308
Richland	$ 8,627	$ 11,978	$ 12,364	$ 386
Total, Facility Operations and Maintenance	$ 67,312	$ 71,191	$ 63,290	$ -7,901

II. B. Laboratory and Facility Funding Table: Facility Operations and Maintenance

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Ames Lab	$ 618	$ 670	$ 385	$ -285
Argonne National Lab (East)	13,612	12,494	12,357	-137
Argonne National Lab (West)	2,641	3,059	3,175	116
Brookhaven National Lab	4,758	5,471	7,521	2,050
Energy Technology Engineering Center	2,070	3,525	2,236	-1,289
Fermi National Accelerator Lab	2,576	2,520	2,751	231
Inhalation Toxicology Research Institute	676	654	604	-50
Lawrence Berkeley Lab	8,264	9,005	6,378	-2,627
Oak Ridge National Lab	13,714	11,185	6,877	-4,308
Princeton Plasma Physics Lab	6,391	5,981	4,964	-1,017
Stanford Linear Accelerator Center	3,565	4,649	3,678	-971
Hanford Site	8,627	11,978	12,364	386
Total, Facility Operations and Maintenance	$ 67,312	$ 71,191	$ 63,290	$ -7,901

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facility Operations and Maintenance			
Albuquerque			
Operating	INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI) Provided funding for baseline waste management activities including FFCAct treatment plans and MW inventory reports. Commercially treated 137 drums of mixed waste offsite. Conducted environmental audits and worker training. Prepared annual RCRA reports and updated safety documentation. ($431)	INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI) Continue waste management including treatment, storage, and disposal of hazardous, mixed and radioactive waste. Increase shipments of radioactive waste to NTS. Additional waste generator tracking and self-assessment. ($609)	INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI) Will continue treatment, storage, and disposal of hazardous, radioactive and mixed waste. Will submit and begin implementation of FFCAct Final Site Treatment Plan. Will complete disposal of low-level waste inventory. ($604)
	$431	$609	$604
Capital Equipment	The Albuquerque Operations Office budget provides for capital equipment purchases to support the activities described above. ($45)	The Albuquerque Operations Office budget provides for capital equipment purchases to support the activities described above. ($45)	No activity. ($0)
	$45	$45	$0
Subtotal, Albuquerque	$476	$654	$604

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facility Operations and Maintenance			
Chicago			
Operating	ARGONNE NATIONAL LABORATORY-EAST	ARGONNE NATIONAL LABORATORY-EAST	ARGONNE NATIONAL LABORATORY-EAST
	The following were two major tasks performed at Argonne-East; funding for both is shown at the end of the narrative section:	The following are two major tasks performed at Argonne-East; funding for both is shown at the end of the narrative section:	The following are two major tasks performed at Argonne-East; the funding for both is shown at the end of the narrative section:
	Managed the base waste management program to ensure compliant treatment, storage, and disposal activities for hazardous, low-level, transuranic, and mixed wastes. Treated and disposed of approximately 7,000 cubic feet of low-level radioactive waste (LLW) and 25,000 cubic feet of hazardous waste. Repackaged and disposed of 7,300 cubic feet of backlog LLW.	Continue prior year activities as waste volumes remain constant. Repackage and dispose of an additional 8,500 cubic feet of backlog LLW. Characterize several orphan waste projects of unknown composition onsite to determine proper treatment and disposal method.	Will continue compliant treatment, storage and disposal activities. In addition, will complete repackaging activities necessary to dispose of remaining backlog LLW waste and will develop bench-scale treatment to treat ANL-E's mixed waste streams.
	Initiated and completed additional stormwater characterization work required by Illinois Environmental Protection Agency (IEPA) to meet the requirements of the draft IEPA-approved National Pollution Discharge Elimination System (NPDES) permit. Completed sampling and analysis work of the soils surrounding the Sewage Collection System. In addition, completed characterization of the sludge beds prior to the removal of PCB contaminated sludge. The sludge drying beds contain about 2,300 cubic feet of TSCA-mixed waste which must be removed and disposed. ($13,429)	Complete bench scale testing of PCB contaminated sludge to determine proper treatment and disposal method. ($11,894)	Will remove and treat about 2,300 cubic feet PCB contaminated sludge using the method recommended from the treatability studies; including an additional waste stream of LLW from the sludge beds. ($12,039)

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III. Facility Operations and Maintenance (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	BROOKHAVEN NATIONAL LABORATORY (BNL)	BROOKHAVEN NATIONAL LABORATORY (BNL)	BROOKHAVEN NATIONAL LABORATORY (BNL)
	Continued compliant base waste management operations through proper treatment, storage and disposal of hazardous, low-level, and mixed wastes. Shipped and disposed of 3,700 cubic feet of LLW. Shipped and disposed of 60 tons of hazardous waste generated annually. A significant backlog of LLW remains. ($4,423)	Continue base waste management operations. Ship and dispose of the 7,000 cubic feet of LLW and 60 tons of hazardous waste generated annually. ($5,341)	Will continue base waste management operations. Will continue to ship and dispose of 7,000 cubic feet of LLW generated annually. Increased funding in FY 1996 will enable BNL to ship and dispose of approximately 7,000 cubic feet of backlogged LLW and will procure and install new waste concentration equipment. In addition, BNL will complete the move to new facilities thus complying with the Interagency Agreement. ($6,806)
	FERMILAB	FERMILAB	FERMILAB
	The following were two major tasks performed at Fermilab, the funding for which is summed at the end of the narrative section:	The following are two major tasks performed at Fermilab, the funding for which is summed at the end of the narrative section:	The following are two major tasks performed at Fermilab, the funding for which is summed at the end of the narrative section:
	Activity transferred to Waste Management from Corrective Activities. Completed PCB cleanup of two service buildings around Main Ring Accelerator as required. Cleanup schedule extends to FY 1999 per State approval.	Complete PCB cleanup of two additional service buildings around Fermi's Main Ring Accelerator as required.	Will complete PCB cleanup of two more service buildings around Fermi's Main Ring Accelerator. The increase will in funds be to conduct additional Remedial Investigations/Feasibility Studies at inactive waste sites as part of RCRA Part B Permit.
	Continued compliant base waste management operations through proper treatment, storage, and disposal of hazardous and low-level wastes and disposed of final ten PCB contaminated transformers. Prepared and submitted RCRA Facility Investigation (RFI) Phase I to Illinois EPA in support of the RCRA Part B permit process. Shipped and disposed of approximately 3,000 cubic feet of LLW. ($2,260)	Continue base waste management operations including shipment and disposal of 3,000 cubic feet of LLW and will prepare and submit RFI Phase 2 workplan to Illinois EPA. ($2,468)	Will continue base waste management operations and will ship and dispose of approximately 2,000 cubic feet of LLW. ($2,701)

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III. Facility Operations and Maintenance (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	PRINCETON PLASMA PHYSICS LABORATORY (PPPL) Continued compliant base waste management operations through proper treatment, storage and disposal of hazardous, low-level and mixed wastes. In addition, disposed of 1,102 tons of contaminated soil from leaking Underground Storage Tanks (UST) at PPPL. Shipped and disposed of 2,500 cubic feet of LLW generated annually and about 100,000 pounds of hazardous waste. ($6,246)	PRINCETON PLASMA PHYSICS LABORATORY (PPPL) Continue base waste management operations to dispose of annually generated 150,000 pounds of hazardous waste and 2,500 cubic feet of LLW. In addition, planning activities concerning the shutdown and removal of the Tokamak Fusion Test Reactor will occur. Additional characterization occurs for the UST project, and additional disposal activity of solvent or petroleum contaminated soil is expected. ($5,981)	PRINCETON PLASMA PHYSICS LABORATORY (PPPL) Will continue base waste management operations to dispose of about 150,000 pounds of hazardous waste. Shutdown and removal of the Tokamak Fusion Test Reactor will begin in FY 1996. LLW generated by the project increases to 5,636 cubic feet. ($4,539)
	AMES Continued compliant waste management operations through proper treatment, storage and disposal of 4,500 kg hazardous, low-level and mixed wastes. In addition, increased staff and training necessary to ensure compliance with RCRA and DOE Orders. Upgraded RCRA storage area in response to Tiger Team findings. ($518)	AMES Continue base waste management operations. Will make one shipment of 4,000 kg of low-level waste. ($670)	AMES Will continue base waste management operations at the same level as the prior year through productivity gains. Will make one shipment of about 3,750 kg of low-level waste. ($385)
	ARGONNE NATIONAL LABORATORY-WEST Continued transuranic waste (TRU) shipping and storage activities, low-level waste (LLW) (72 cubic meters) and LLW-MW treatment and disposal, and TRU and TRU-MW disposal. Characterized some liquid effluents. Initiated and completed an ANL-W PCB survey and RCRA Part A&B permits for sodium storage to allow storage in Building 703 until treatment is performed. ($7,641)	ARGONNE NATIONAL LABORATORY-WEST Continue compliant waste management operations through proper treatment, storage and disposal of hazardous, low-level, transuranic and mixed wastes. Ship and dispose of 70 cubic meters of LLW. Complete liquid effluent characterization activities required by Tiger Team findings and CWA/NPDES permit. ($2,827)	ARGONNE NATIONAL LABORATORY-WEST Will continue compliant base waste management operations to treat, store, and dispose of waste. Will ship and dispose of 72 cubic meters of LLW. ($3,175)
	$29,517	$29,181	$29,645

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III. Facility Operations and Maintenance (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	The Chicago Operations Office budget provided for capital equipment purchases to support the activities described above. ($1,079)	The Chicago Operations Office budget provides for capital equipment purchases to support the activities described above. ($1,014)	The Chicago Operations Office budget provides for capital equipment purchases to support the activities described above. ($1,508)
	$1,079	$1,014	$1,508
Subtotal, Chicago	$30,596	$30,195	$31,153
Oakland			
Operating	LAWRENCE BERKELEY LABORATORY (LBL) LBL WM program was enhanced to provide increased quality assurance related to waste inspection, sampling/characterization, verification, and tracking, as well as implementation of more thorough training and audit programs and continued upgrade of waste tracking database. ($7,422)	LAWRENCE BERKELEY LABORATORY (LBL) Prior year activities to support the WM program at LBL will continue. Increased funding will support program enhancements and increases in waste management and disposal costs. ($8,533)	LAWRENCE BERKELEY LABORATORY (LBL) Prior year activities to support the WM program at LBL will continue. ($6,007)
	ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC) Supported efforts to develop and enhance the existing base WM program at ETEC. Activities included establishment of a computerized database for waste tracking and reporting. ($1,890)	ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC) Continue prior year activities focusing on implemenation of quality and system improvements at ETEC. Increased funding levels are necessary to support growing waste volumes. ($3,525)	ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC) Will continue prior year activities focusing on implemenation of quality and system improvements at ETEC. ($2,236)

III. Facility Operations and Maintenance (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	STANFORD LINEAR ACCELERATOR CENTER (SLAC)	STANFORD LINEAR ACCELERATOR CENTER (SLAC)	STANFORD LINEAR ACCELERATOR CENTER (ETEC)
	Efforts to define and develop WM program roles and responsibilities at SLAC were performed. ($3,385)	Prior year activities will continue. In addition, a formal quality assurance program will be established for waste characterization activities, and the Office of Waste Management will assume responsibility for all central WM areas at SLAC which had previously been managed by generator programs. ($4,424)	Prior year activities will be continued. ($3,678)
	LABORATORY FOR ENERGY AND HEALTH RESEARCH (LEHR)	LABORATORY FOR EWERGY AND HEALTH RESEARCH (LEHR)	LABORATORY FOR ENERGY AND HEALTH RESEARCH (LEHR)
	Waste management program activities at the Laboratory for Energy-Related Health Research (LEHR) were funded in the Oakland Non-Defense Program Control budget. ($0)	Program at LEHR continues to be funded by Oakland Non-Defense Program Control budget. ($0)	Will directly fund support to characterize legacy waste at LEHR to ship offsite for treatment and/or disposal. ($371)
	$12,697	$16,482	$12,292
Capital Equipment	The Oakland Operations Office budget provided for capital equipment purchases to support the activities described above. ($1,202)	The Oakland Operations Office budget provides for capital equipment purchases to support the activities described above. ($697)	No activity. ($0)
	$1,202	$697	$0
Subtotal, Oakland	$13,899	$17,179	$12,292

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III. Facility Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge			
Operating	OAK RIDGE NATIONAL LABORATORY (ORNL) Continued regulatory compliant treatment of approximately 195 million gallons of non-radiological wastewater, storage of approximately 170,000 pounds of hazardous waste, and disposal of an estimated 60,000 cubic feet of sanitary/industrial waste generated by Waste Management at ORNL. Prepared safety support documentation for LLLW system Final Safety Evaluation. ($13,414)	OAK RIDGE NATIONAL LABORATORY (ORNL) Continue compliant treatment, storage, and disposal activities for the non-radiological, hazardous, sanitary, and industrial waste streams. Continue to prepare Phase II safety documentation for the LLLW system. ($11,110)	OAK RIDGE NATIONAL LABORATORY (ORNL) Will continue compliant treatment, storage, and disposal activities for the non-radiological, hazardous, sanitary, and industrial waste streams. ($6,727)
	$13,414	$11,110	$6,727
Capital Equipment	The Oak Ridge Operations Office budget provided for capital equipment purchases to support the activities described above. ($300)	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($75)	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($150)
	$300	$75	$150
Subtotal, Oak Ridge	$13,714	$11,185	$6,877

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III. Facility Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Richland			
Operating	The following two major tasks were performed at Richland, the funding for which is summed at the end of the narrative section:	The following two major tasks are being performed at Richland, the funding for which is summed at the end of the narrative section:	The following two major tasks will be performed at Richland, the funding for which is summed at the end of the narrative section:
	Provided environmental surveillance and maintenance of the 327 Building hot cell complex, which is the Waste Management Program's responsibility. Sitewide surveillance and maintenance is the responsibility of the Landlord program.	Continue surveillance and maintenance of the 327 Building hot cell complex. Initiate a program for locating holdup fissionable materials in ventilation ducts.	Will continue surveillance and maintenance of the 327 Building hot cell complex.
	Initiated 324-B cell restoration. Continued source term removal, package and transfer to special case waste storage. Initiated 324-B cell restoration. ($8,627)	Continue 324-B cell restoration. Continue source term removal, package and transfer to special case waste storage. The B-Cell restoration will be 78% complete, with the removal of the 1a rack and gallery service and the reduction of dispersible source term on 77% of the floor area. ($11,978)	Will continue 324-B cell restoration. ($12,364)
	$8,627	$11,978	$12,364
Capital Equipment	No activity. ($0)	No activity. ($0)	No activity. ($0)
	$0	$0	$0
Subtotal, Richland	$8,627	$11,978	$12,364
Facility Operations and Maintenance	$67,312	$71,191	$63,290

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (NON-DEFENSE)

I. Preface: New Facilities

Many facilities in use within the DOE complex have reached or exceeded their design life but due to several factors these facilities have not been replaced. As a result, 30 year old facilities that were designed to be used for 20 years are still in use. This does not lead to optimal operating conditions. Maintenance costs for the existing, worn-out facilities can approach the cost of merely replacing the facility. Also, as the need for treatment, storage and disposal capacity grows, new or expanded facilities are needed to meet the growing demand or to provide capacity to work off back-logged waste.

This program category includes the costs of engineering studies, designs, and construction costs of new projects and modifications to existing facilities needed for waste management operations. It also includes any environmental documentation work, Safety Analysis Reviews (SAR) and Operational Readiness Reviews (ORR) necessary to place a facility into operation. Once the facility has been placed into operation, all of its annual and outyear costs, including capital equipment not related to construction, will be funded under the Facilities Operations and Maintenance account described earlier in the budget.

Major milestones include completion of construction of the waste management facility at Brookhaven in FY 1996, and completion of construction of cask dryer and storage facilities at the Idaho Chemical Processing Plant. The benefits of completing these activities is they will replace aging facilities which could become non-compliant or will provide needed expanded capacity to compliantly manage waste.

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II. A. Summary Table: New Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Chicago	$ 9,934	$ 14,169	$ 1,298	$ -12,871
Idaho	$ 7,704	$ 5,476	$ 5,183	$ -293
Oakland	$ 6,216	$ 1,714	$ 1,272	$ -442
Oak Ridge	$ 14,149	$ 13,620	$ 2,809	$ -10,811
Richland	$ 1,747	$ 0	$ 0	$ 0
Total, New Facilities	$ 39,750	$ 34,979	$ 10,562	$ -24,417

II. B. Laboratory and Facility Funding Table: New Facilities

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 1,651	$ 3,650	$ 787	$ -2,863
Energy Technology Engineering Center	0	649	601	-48
Idaho National Engineering Lab	7,704	5,476	5,183	-293
Argonne National Lab (West)	292	351	411	60
Brookhaven National Lab	7,020	5,731	0	-5,731
Fermi National Accelerator Lab	971	2,500	0	-2,500
Lawrence Berkeley Lab	5,616	625	671	46
Oak Ridge National Lab	14,149	13,620	2,809	-10,811
Princeton Plasma Physics Lab	0	1,937	100	-1,837
Stanford Linear Accelerator Center	600	440	0	-440
Hanford Site	1,747	0	0	0
Total, New Facilities	$ 39,750	$ 34,979	$ 10,562	$ -24,417

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
New Facilities			
Chicago			
Operating	ARGONNE NATIONAL LABORATORY-EAST Continued Title I design for Building 306 rehabilitation to support safe work conditions and increase the efficiency and support the growth of waste management operations. In addition to the operating expense shown here, there is $194,000 of capital construction associated with this project, 91-E-600. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. Initiated Title I design of hazardous and transuranic waste storage facilities and Title II design of mixed waste storage facilities to ensure sufficient RCRA compliant storage capacity for projected ANL-E waste. There is $1,257,000 capital construction associated with this project, 91-E-602. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($200)	ARGONNE NATIONAL LABORATORY-EAST Complete design of Phase I of Building 306 utilizing carryover funds. Complete Title II designs of storage facilites and required NEPA documentation to allow construction to proceed in compliance with DOE Orders. In addition to the operating expense shown here, there is $3,600,000 of capital construction associated with this project, 91-E-602. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($50)	ARGONNE NATIONAL LABORATORY-EAST Will initiate Phase II design for Building 306 and complete Phase I construction portion of the rehab project. Construction of the mixed, hazardous and transuranic waste storage facilities will be initiated utilizing carryover funds. There is $787,000 capital construction associated with this project, 91-E-600. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)
	BROOKHAVEN NATIONAL LABORATORY (BNL) Completed Title I and Title II design of new Waste Management Facility (WMF). It will replace the current waste management area which is an operable unit scheduled to be remediated in FY 1997 under an Interagency Agreement. Completed Environmental Assessment (EA) for project to meet NEPA requirements. There is $5,969,000 capital construction associated with this project, 91-E-305. The capital construction funding is shown as a lump sum at the end of each operations	BROOKHAVEN NATIONAL LABORATORY (LBL) Initiate construction of WMF to replace the current waste management area which is an operable unit scheduled to be remediated in FY 1997 under an Interagency Agreement.	BROOKHAVEN NATIONAL LABORATORY (LBL) Will complete construction of the WMF utilizing carryover funds.

1995

III. New Facilities (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	office narrative section.		
	Initiated connecting floor drains to central sewage system to eliminate possible groundwater contamination and eliminate NPDES violations. There is $1,051,000 capital construction associated with this project, 93-E-632. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Complete construction of floor drain project to eliminate possible groundwater contamination. There is $571,000 capital construction associated with this project, 93-E-632. The capital construction funding is shown as a lump sum at the end of each operations narrative section. ($0)	No activity. ($0)
	FERMILAB	FERMILAB	FERMILAB
	Initiated Title I design and the Environmental Assessment for the Radioactive Waste Processing Building at Fermi to provide regulatory compliant LLW storage sorting and handling for the site. There is $971,000 capital construction associated with this project, 94-E-601. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Complete Title I and initiate and complete Title II design of the Radioactive Waste Building at Fermi to replace 70-year old barn currently used. There is $2,500,000 capital construction associated with this project, 94-E-601. The capital construction funding is shown as a lump sum at the end of each operations narrative section. ($0)	Will complete construction of the Radioactive Waste Processing Building at Fermi utilizing carryover funds. ($0)
	PRINCETON PLASMA PHYSICS LABORATORY (PPPL)	PRINCETON PLASMA PHYSICS LABORATORY (PPPL)	PRINCETON PLASMA PHYSICS LABORATORY (PPPL)
	Updated the conceptual design for radioactive waste handling facility at PPPL to provide sufficient storage capacity for LLW and to support the shutdown and removal project for the Tokamak Fusion Test Reactor using carryover funds.	Complete final design and begin construction of radioactive waste handling facility. Construction begins in May 1995. There is $1,937,000 capital construction associated with this project, 95-E-601. The capital construction funding is shown as a lump sum at the end of each operations office narrative section.	Will complete construction of radioactive waste handling facility utilizing carryover funds.
	Completed upgrades to Hazardous Material Storage facility to meet	No activity.	No activity.

III. New Facilities (Cont'd):
Chicago (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	floodplain protection guidelines.		
	No activity. ($0)	No activity. ($0)	Will initiate design of a Stormwater Detention Cell to maintain regulatory compliance with the Clean Water Act, and to expand the sites existing stormwater detention capacity. There is $100,000 capital construction associated with this project. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)
	ARGONNE NATIONAL LABORATORY-WEST Prior years funded in corrective activities, installed 100 cathodically protected liners at the Radioactive Scrap and Waste Facility to meet the requirements of the RCRA Part B Permit. There is $292,000 capital construction associated with this General Plant Project (GPP). The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	ARGONNE NATIONAL LABORATORY-WEST Install 117 cathodically protected liners. There is $351,000 capital construction associated with this GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	ARGONNE NATIONAL LABORATORY-WEST Will install 132 cathodically protected liners. There is $411,000 capital construction associated with this GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)
	$200	$50	$0
Construction	The Chicago Operations Office budget provides for construction to support the activities described above. ($9,734)	The Chicago Operations Office budget provides for construction to support the activities described above. ($14,119)	The Chicago Operations Office budget provides for construction to support the activities described above. ($1,298)
	$9,734	$14,119	$1,298
Subtotal, Chicago	$9,934	$14,169	$1,298

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III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho			
Operating	The Dry Cask Storage Project continued with completion of the design for the cask and mechanical portions of the canister drying system. Initiated fabrication of mechanical parts of the canister drying system. Completed conceptual design for a storage facility located at Idaho Chemical Processing Plant (ICPP). Completed environmental documentation. In addition to the operating expense shown here, there is $7,104,000 of capital construction associated with this project, 93-E-900. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($600)	Complete design, fabrication, and testing of the canister drying system including construction of the dryer cask. Prepare preliminary safety analysis documentation to support design and construction activities. Issue request for proposal to examine privatization options. In addition to the operating expense shown here, there is $4,910,000 of capital construction associated with this project, 93-E-900. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($566)	Will initiate construction of dryer and construction of ICPP storage facilities, and testing of the canister drying system including construction of the dryer cask. Will initiate cask procurement activities. There is $4,048,000 capital construction associated with this project, 93-E-900. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,135)
	$600	$566	$1,135
Construction	The Idaho Operations Office budget provides for construction to support the activities described above. ($7,104)	The Idaho Operations Office budget provides for construction to support the activities described above. ($4,910)	The Idaho Operations Office budget provides for construction to support the activities described above. ($4,048)
	$7,104	$4,910	$4,048
Subtotal, Idaho	$7,704	$5,476	$5,183

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland			
Operating	LAWRENCE BERKELEY LABORATORY (LBL) Completed sitework construction and Title I and II design was initiated and the contract has been awarded for facility construction, and construction of the Hazardous Waste Handling Facility (HWHF) at LBL. The large increase in funding requested in FY 1994 was required to implement modifications in the floor plans necessary to physically separate activities related to processing and storage of mixed waste from radioactive waste to satisfy the waste acceptance criteria from Richland; additionally, filtering, fan redundancy and monitoring for radiation exhaust systems is required to comply with DOE Orders and the Clean Air Act, and safety features will also be implemented to comply with the revised provisions of the 1991 Uniform Building Code and Uniform Fire Code. There is $5,616,000 of capital construction associated with this project, 88-R-812. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	LAWRENCE BERKELEY LABORATORY (LBL) Complete construction activities for the HWHF at LBL to perform pre-operational surveys and begin operations. There is $625,000 capital construction associated with this project, 88-R-812. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	LAWRENCE BERKELEY LABORATORY (LBL) Will complete operational testing and Safety Analysis Report requirements for the HWHF at LBL and begin operations. There is $671,000 capital construction associated with this project, 88-R-812. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)

III. New Facilities (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	STANFORD LINEAR ACCELERATOR CENTER (SLAC) Began siting and Conceptual Design Report (CDR) for new Radioactive and Mixed Waste Storage Facility (RMWSF) to accommodate increasing waste volumes at SLAC. There is $600,000 capital construction associated with this General Plant Project (GPP). The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	STANFORD LINEAR ACCELERATOR CENTER (SLAC) Complete design and award contract. There is $440,000 capital construction associated with this GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	STANFORD LINEAR ACCELERATOR CENTER (SLAC) Will complete construction and testing of new RMWSF and begin operations. Project is funded from prior year carryover. ($0)
	ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC) No activity. ($0)	ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC) Initiate design activities for the construction of the sodium Component Handling and Cleaning Facility (CHCF) and Wet Vapor Nitrogen Cleaning System to treat and manage increasing volumes of sodium contaminated materials and waste at ETEC. There is $669,000 capital construction associated with this project. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	ENERGY TOXICOLOGY ENGINEERING CENTER (ETEC) Will complete the construction of the sodium CHCF and Wet Vapor Nitrogen Cleaning System to treat and manage increasing volumes of sodium contaminated materials and waste at ETEC. There is $601,000 capital construction associated with this project. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)
	$0	$0	$0
Construction	The Oakland Operations Office budget provides for construction to support the activities described above. ($6,216)	The Oakland Operations Office budget provides for construction to support the activities described above. ($1,714)	The Oakland Operations Office budget provides for construction to support the activities described above. ($1,272)
	$6,216	$1,714	$1,272

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Oakland	$6,216	$1,714	$1,272
Oak Ridge			
Operating	Continued design and construction activities for previously identified general plant projects (GPPs) for facility upgrades and safety improvements. Completed construction on four GPPs. Provided support for identification, definition, and pre-construction documentation for new GPPs. In addition to the operating expense shown here, there is $1,041,000 capital construction associated with these GPP projects. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($2,220)	Continue design and construction activities for GPPs. Complete construction on 13 projects. Provides support for identification, definition, and pre-construction documentation for new GPPs. In addition to the operating expense shown here, there is $600,000 of capital construction associated with these GPP projects. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,920)	Will continue design and construction activities for ongoing GPPs. Will complete construction on two GPPs. In addition to the operating expense shown here, there is $1,100,000 of capital construction associated with these GPP projects. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,000)
	Completed Title I and initiated Title II design for Bethel Valley Federal Facilities Agreement project at ORNL. This project will bring the Bethel Valley LLLW collection and transfer system into compliance with the provisions of the Federal Facilities Agreement (FFA). In addition to the operation expense shown here, there is $3,494,000 of capital construction associated with this project, 94-E-602. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($500)	Complete Title II design for the Bethel Valley FFA project at ORNL. In addition to the operation expense shown here, there is $7,000,000 of capital construction associated with this project, 94-E-602. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($100)	Construction will continue at the Bethel Valley FFA project. In addition to the operation expense shown here, there is $300,000 of capital construction associated with this project, 94-E-602. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($309)

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Continued upgrading the Sanitary Sewer System at ORNL. Completed project support documentation and completed Titles I and II design. Began lining the existing sanitary waste collection system and manholes, re-activation of two sludge drying beds, and construction of a 90-day accumulation pad to maintain compliance with state permit requirements. In addition to the operation expense shown here, there is $6,794,000 of capital construction associated with this project, 93-E-633. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($100)	Continue lining the existing sanitary waste collection system and manholes, re-activation of two sludge drying beds, and construction of a 90-day accumulation pad to maintain compliance with state permit requirements. There is $4,000,000 capital construction associated with this project, 93-E-633. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	The East Area Sewer Main and septic and dosing tank portions of this project will continue using prior year funds. Project surveillance, audits, QA tracking and reporting will be performed. ($100)
	$2,820	$2,020	$1,409
Construction	The Oak Ridge Operations Office budget provides for construction to support the activities described above. ($11,329)	The Oak Ridge Operations Office budget provides for construction to support the activities described above. ($11,600)	The Oak Ridge Operations Office budget provides for construction to support the activities described above. ($1,400)
	$11,329	$11,600	$1,400
Subtotal, Oak Ridge	$14,149	$13,620	$2,809

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Richland			
Operating	No activity. ($0)	No activity. ($0)	No activity. ($0)
	$0	$0	$0
Construction	Completed construction for Section B 329 Building compliance and initiate section A construction. ($1,747)	Continue Phase 2 construction using prior year carryover. Staff and equipment will initiate the move into the Phase 2 laboratories using carryover funds. ($0)	Will complete Phase II construction. Staff and equipment will complete the final move into the Phase II laboratories using carryover funds. ($0)
	$1,747	$0	$0
Subtotal, Richland	$1,747	$0	$0
New Facilities	$39,750	$34,979	$10,562

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KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (NON-DEFENSE)

I. Preface: West Valley Demonstration Project

The goal of the West Valley Demonstration Project is to demonstrate solidification for disposal of High-Level Waste (HLW) under the provisions of Public Law 96-368, the "West Valley Demonstration Project Act" enacted in 1980. The project is implementing an integrated production-scale development and demonstration project for treating the 660,000 gallons of alkaline and acidic liquid HLW stored at the Western New York Nuclear Service Center, near West Valley, New York. The Center reprocessed spent nuclear fuel from 1966 to 1972. By virtue of demonstrating the solidification of liquid high-level wastes, the hazards associated with continued storage of the liquid wastes at the Center will be eliminated. Major activities embodied in the project include: 1) decontamination required to prepare existing facilities and equipment; 2) removal of the wastes from the underground storage tanks; 3) development, design, construction, and operation of systems for solidification of the waste; 4) acquisition of disposal containers; 5) temporary storage and transportation of the solidified waste; 6) decontamination and decommissioning (D&D) of the waste tanks, facilities, hardware, and material used in carrying out the project; and 7) disposal of LLW and transuranic (TRU) waste produced from project activities. This project is funded as an operating expense funded construction project and in accordance with the West Valley Demonstration Project Act, New York State pays 10 percent of the project costs. The Total Project Cost Estimate for the vitrification portion of the project is $1,394,000, which includes the New York State contribution. The project is on schedule for the start of radioactive vitrification operations in the second quarter of FY 1996. Final testing and initial vitrification operations will be the primary focus of the project in FY 1996.

II. A. Summary Table: West Valley Demonstration Project

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
High-Level Waste Solidification	$ 50,700	$ 45,800	$ 39,850	$ -5,950
Site Operations	29,800	33,850	36,250	2,400
Project Support	17,850	13,950	19,850	5,900
Low-Level, Hazardous, Transuranic Waste Management	14,800	7,580	11,050	3,470
Phase II	7,196	23,947	15,100	-8,847
Total, West Valley Demonstration Project	$ 120,346	$ 125,127	$ 122,100	$ -3,027

II. B. Laboratory and Facility Funding Table: West Valley Demonstration Project

West Valley Project Office	120,346	125,127	122,100	3,027
Total, West Valley Demonstration Project	$ 120,346	$ 125,127	$ 122,100	$ -3,027

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
West Valley Demonstration Project			
High-Level Waste Solidification	Completed Vitrification Facility construction. Initiated checkout and testing activities. Continued procurement of spare parts and supplies for startup. Initiated Vitrification ORRB activities. Initiated sludge preparation activities including preparation for thorex and zeolite transfer to tank 80-2. Resumed Waste Qualification Program. Completed fabrication of transfer cart. Continued fabrication and installation of jumpers. ($50,700)	Reduction from FY 1994 is due to completion of vitrification facility construction. Construction/checkout/ testing of the NOx system and the Vitrification facility will be completed. The Waste Compliance Plan and the Waste Qualification Report will be approved and issued. Vitrification Facility subsystem testing will be completed along with system performance tests in preparation for remote integrated non-radioactive operations. Complete fabrication and installation of jumpers. Begin procurement of canisters. ($45,800)	Test vitrification systems through remote integrated non-radioactive operations. Will begin sludge mobilization transfer into the vitrification facility. Will conduct radioactive vitrification operations. Will begin transfer of filled canisters into the High-Level Waste Interim Storage Facility. Will continue to procure canisters which will contain the solidified waste. ($39,850)
	$50,700	$45,800	$39,850
Site Operations	Supported site operations including general support of plant operations, energy and utility upgrades, asbestos management, environmental compliance and documentation, training activities and operational safety programs. ($29,800)	Support site operations including general support of plant operations, energy and utility upgrades, asbestos management, environmental compliance and documentation, training activities and operational safety programs. ($33,850)	Will support site operations including general support of plant operations, energy and utility upgrades, asbestos management, environmental compliance and documentation, training activities and operational safety programs. Increased level of plant and facility repairs and maintenance. ($36,250)
	$29,800	$33,850	$36,250

III. West Valley Demonstration Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Project Support	Continued project support activities including public information, quality assurance, project control, overall safety and industrial hygiene and bioassay programs. Operated environmental and analytical laboratories. Continued analytical lab procurements and upgrades in preparation for vitrification. ($17,850)	Continue project support activities including public information, quality assurance, project control, overall safety and industrial hygiene and bioassay programs. Operate environmental and analytical laboratories. Continue analytical lab procurements and upgrades in support of vitrification. ($13,950)	Will continue project support activities including public information, quality assurance, project control, overall safety and industrial hygiene and bioassay programs. Will operate environmental and analytical laboratories. Will continue analytical lab procurements and upgrades in support of vitrification. ($19,850)
	$17,850	$13,950	$19,850
Low-Level, Hazardous, Transuranic Waste Management	Continued management (i.e., collection, storage and monitoring) of radioactive mixed waste. Continued operation of the Size Reduction Facility and Supercompactor. Completed sludgewash operations and processing of sludgewash liquid through the Integrated Radwaste Treatment System (IRTS). ($14,800)	Continue management (i.e., collection, storage and monitoring) of radioactive mixed waste. Continue operation of the Size Reduction facility and Supercompactor. ($7,580)	Will continue management (i.e., collection, storage, monitoring, transportation) of radioactive mixed waste. Will continue operation of the Size Reduction Facility and Supercompactor. Will continue the cement solidification process in support of radioactive operations. ($11,050)
	$14,800	$7,580	$11,050
Phase II	Continued Draft Environemntal Impact Statement (DEIS) and internal review. Continued RCRA 3008(H) and Federal/State Facility Compliance Agreement (FSFCA) actions consistent with implementation of agreements negotiated. Initiated HLW shipout facility design. Initiated preliminary design for contact container management area, and container storage areas. Initiated studies to stabilize old plant and prepare for BD-2 transition. ($7,196)	Begin public review of DEIS and respond to comments. Continue RCRA 3008(H) and FSFCA actions consistent with implemenation of agreements negotiated. Initiate design for contact container management and contact storage areas. Continue design for shielded storage area. Initiate design for shielded management area. Continue design for HLW shipout; continue design and procurements for old plant stabilization and BD-2 transition. ($23,947)	Will continue public review and comment resolution for the Environmental Impact Statement. Will begin procurement of the load-out and Equipment Decontamination Room equipment. Will continue high-level waste transition studies and some plant stabilization activities. Will continue RCRA 3008(H) and FSFCA actions consistent with implementation of agreements negotiated. ($15,100)
	$7,196	$23,947	$15,100

III. West Valley Demonstration Project (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
West Valley Demonstration Project	$120,346	$125,127	$122,100

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KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (NON-DEFENSE)

I. Preface: National Low-Level Waste

The National Low-Level Waste (LLW) Program provides timely and effective implementation of DOE responsibilities mandated by P.L. 99-240, the Low-Level Radioactive Waste Policy Amendments Act of 1985 (the Act). The program provides technical assistance to the States and compact regions in meeting their responsibilities under P.L. 99-240 for management and disposal of their LLW, provides for the administrative and Congressional reporting requirements assigned to DOE, and provides planning for management Greater-Than-Class C (GTCC) LLW.

II. A. Summary Table: National Low-Level Waste

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Assistance to States and Compacts	$ 4,350	$ 4,500	$ 4,800	$ 300
Administration and Reporting	150	150	200	50
Management and Disposal of Greater-Than-Class C Low-Level Waste (GTCC LLW)	4,155	2,827	1,000	-1,827
Total, National Low-Level Waste	$ 8,655	$ 7,477	$ 6,000	$ -1,477

II. B. Laboratory and Facility Funding Table: National Low-Level Waste

Idaho National Engineering Lab	$ 8,655	$ 7,477	$ 6,000	$ -1,477
Total, National Low-Level Waste	$ 8,655	$ 7,477	$ 6,000	$ -1,477

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
National Low-Level Waste			
Assistance to States and Compacts	Continued prior year activities for technical assistance to States and regional compacts as required and requested under P.L. 99-240. The funding delivered additional technical assistance requested from states. Technical assistance to States included scientific and engineering information, workshops on siting disposal facilities, guidance on disposal site performance assessments, evaluation of alternative disposal concepts, and an annual conference for information exchange. The program also supported the periodic convening of a forum of State and Compact representatives to address policy issues of mutual interest. ($4,350)	Continue prior year activities for technical assistance to States and compacts as required and requested under P.L. 99-240. ($4,500)	Continue prior year activities for technical assistance to States and compacts as required and requested under P.L. 99-240. ($4,800)
	$4,350	$4,500	$4,800
Administration and Reporting	Published policy and procedures for return of rebates to States/compacts or generators in accordance with the milestones in P.L. 99-240. Continued return of rebate refunds held in escrow account. Submitted the 1992 annual report to Congress on Low-Level Radioactive Waste Management Progress. ($150)	Submit the 1993 annual progress report, and the rebate expenditure report, to Congress. ($150)	Submit the 1994 annual progress reprot and rebate expenditure report to Congress. ($200)
	$150	$150	$200

III. National Low-Level Waste (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Management and Disposal of Greater Than-Class C Low-Level Waste (GTCC LLW)	Continued evaluation of candidate disposal options, and associated cost estimates for receipt and storage of GTCC-LLW. Completed assessment of requirements for dedicated storage. Evaluated options for management of excess sealed radiation sources accepted by DOE. ($4,155)	Continue evaluations/studies of GTCC LLW storage and disposal requirements and options. Continue work on cost estimates for disposal (and related treatment) options and development of fee schedules for DOE waste management services. Support efforts to establish capability for receipt, storage, and disposition of excess sealed sources accepted by DOE. The level-of-effort will be based on prior year program reassessment. Lack of demand for this service has resulted in a general reduction of funds. ($2,827)	Support planning, Environmental Impact Assessments, and implementation of selected GTCC-LLW storage and disposal options. Will continue support for receipt, storage, and disposition of excess sealed radiation sources accepted by DOE. The level-of-effort will be based on prior year program reassessment. DOE has GTCC disposal responsibility under P.L. 99-240. ($1,000)
	$4,155	$2,827	$1,000
National Low-Level Waste	$8,655	$7,477	$6,000

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OFFICE OF WASTE MANAGEMENT
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(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Project Summary Listing

Waste Management - Non-Defense

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
GPE-600	General Plant Projects, Waste Management, Non-Defense, VL	$ 23,622	$ 1,933	$ 2,040	$ 2,212	$ 0	$ N/A
95-E-601	Radioactive Waste Handling Facility, PPPL	0	0	1,937	0	0	1,937
94-E-601	Waste Handling Building, Fermilab	0	971	2,500	0	29	3,500
94-E-602	Bethel Valley Federal Fac. Agreement Upgrades, ORNL	0	3,494	7,000	300	9,706	20,500
93-E-632	Laboratory Floor Drain Collection System Upgrades, BNL	959	1,051	571	0	32	2,613
93-E-633	Upgrade Sanitary Sewer System, ORNL	2,000	6,794	4,000	0	3,206	16,000
93-E-900	Dry Cask Storage Project, INEL	2,470	7,104	4,910	4,048	6,968	25,500a/
91-E-305	Waste Management Facilities Project, BNL	5,000	5,969	5,160	0	181	16,310
91-E-322	329 Building Compliance, PNL, RL	7,300	1,747	0	0	53	9,100
91-E-600	Rehabilitation of Waste Management Bldg, 306, ANL	2,870	194	0	787	7,423	11,274
91-E-602	Hazardous, Radioactive, and Mixed Waste Storage Facility, ANL	3,793	1,257	3,600	0	4,250	12,900
88-R-812	Hazardous Waste Handling Facility, SAN	6,213	5,616	625	671	0	13,125
	Subtotal, Construction Funded	$ 54,227	$ 36,130	$ 32,343	$ 8,018	$ 31,848	N/A
	2. Operating Expense Funded:						
	West Valley Demonstration Project, West Valley, NY	$768,462	$120,346	$125,127	$122,100	$ N/A	N/A
	TOTAL, Waste Management - Non-Defense	$822,689	$156,476	$157,470	$130,118	$ 31,848	N/A
	TOTAL NUMBER OF LINE ITEMS	(9)	(11)	(10)	(5)	(9)	

a/ Baseline Change Proposal approved January 24, 1995.

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OFFICE OF WASTE MANAGEMENT
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1. Title and Location of Project:	General Plant Projects, Waste Management, Non-Defense Various Locations	2a. Project No.: GPE-600 2b. Construction Funded

SIGNIFICANT CHANGES

o The FY 1994 Appropriation request has been adjusted due to Congressionally mandated rescission.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location

Project GPE-600, General Plant Projects, Waste Management - Non-Defense, Various Locations

TEC: N/A

Start Date: 1st Qtr. FY 1996

Completion Date: 4th Qtr. FY 1996

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1991	$ 1,967		$ 1,967	$ 0
1992	3,887		3,887	1,859
1993	17,768		17,768	5,602
1994	1,992	- 59 a/	1,933	8,163
1995	2,040		2,040	7,692
1996	2,212		2,212	3,580
1997	0		0	1,629
1998	0		0	925
1999	0		0	357

a/ Congressionally mandated rescission.

3. Narrative:

These projects provide various items of new construction, additions, alterations, and improvements to the lands, buildings, and utility systems at Chicago, and Oak Ridge offices to support program needs in health, safety, and environment, general support, and other program requirements. Some of the projects may be located on non-Government land.

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OFFICE OF WASTE MANAGEMENT
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1. Title and Location of Project: Bethel Valley Federal Facility Agreement Upgrade, Oak Ridge National Laboratory, Oak Ridge, Tennessee

2a. Project No.: 94-E-602
2b. Construction Funded

SIGNIFICANT CHANGES

- A-E work was actually initiated 1st Qtr FY 1994 ahead of the scheduled start date of 2nd Qtr FY 1994.
- The FY 1994 Appropriation request has been adjusted due to a Congressionally mandated rescission.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-602, Bethel Valley Federal Facility Agreement Upgrade, Oak Ridge National Laboratory, Oak Ridge, Tennessee — TEC: $20,500 TPC: $25,450

Start Date: 1st Qtr. FY 1994 a/ Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 3,600	- 106 b/	$ 3,494	$ 1,442
1995	7,000		7,000	3,000
1996	300		300	3,200
1997	9,706		9,706	12,858

a/ A-E work was actually initiated 1st Qtr FY 1994 ahead of the scheduled start date of 2nd Qtr FY 1994.
b/ Congressionally mandated rescission.

3. Narrative:

The proposed project will upgrade a portion of the existing Bethel Valley Liquid Low-Level waste (LLW) collection and transfer (CAT) system at Oak Ridge National Laboratory (ORNL) with the best available technology for satisfying regulatory requirements. The scope of work covered under this project upgrades facilities to meet the requirements of the recently approved Federal Facility Agreement (FFA) between the Department of Energy (DOE), Tennessee Department of Environment and Conservation (TDEC), and the Environmental Protection Agency (EPA).

These upgrades involve the replacement of single wall with double-wall piping and sump liners, addition of drip trays, upgrades leakage detection and control instrumentaiton, and the addition of a new valve pit.

FY ~~1995~~ 1996 funding will be used to ~~complete design and initiate~~ provide engineering inspection of construction and continue construction activities, procurement activities and ~~continue~~ provide project management support. ~~construction activities.~~

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OFFICE OF WASTE MANAGEMENT
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Long Term Storage of TMI-2 Fuel
Idaho National Engineering Laboratory (INEL), Idaho

2a. Project No.: 93-E-900
2b. Construction Funded

SIGNIFICANT CHANGES

- Baseline Change Proposal approved January 24, 1995, to increase the TEC by $4,900,000 to $25,500,000 and the TPC by $5,800,000 to $30,000,000 and schedule by thirty-three. Change was necessary due to programmatic changes and dlesy of NEPA documentation approval.
- Reduction of $466,000 reflects FY 1994 rescission ($216,000) and prior year uncosted reduction ($250,000).

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-E-900, Long Term Storage of TMI-2 Fuel
Idaho National Engineering Laboratory, Idaho

TEC: $25,500a/
TPC: $30,000a/

Start Date: 1st Qtr. FY 1993

Completion Date: 4th Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 2,720		$ 2,720	$ 253
1994	7,104b/	- 250 c/	6,638	982
1995	4,910		4,910	4,918
1996	4,048		4,048	8,797
1997	6,968		7,184	10,550

a/ Baseline Change Proposal approved January 24, 1995.
b/ Reduction due to 3.0% rescission for Non-Defense ($216,000)
c/ Use of prior year funds for uncosted offset.

3. Narrative:

This project is intended to demonstrate the feasibility of long term dry storage of defense fuels using available TMI-II fuel. It includes design and construction of a canister dryer inside the Test Area North (TAN), a storage pad, 54 concrete dry storage casks, specifications and procurement of a commercial fuel storage cask, and a cask transporter tractor. This project will provide dry cask storage for all reactor fuel bearing materials in the TAN Hot Shop Pool.

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OFFICE OF WASTE MANAGEMENT
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Rehabilitation of Waste Management Building 306 Argonne National Laboratory, (ANL), Argonne, Illinois	2a. Project No.: 91-E-600 2b. Construction Funded

SIGNIFICANT CHANGES

- The financial schedule has been revised from the FY 1994 submittal due the TEC, TPC, and project schedule being re-estimated for this project. The re-estimate resulted from an evaluation performed by the DOE to ensure the rehabilitation of the facility would be able to support necessary waste management functions at Argonne National Laboratory-East.
- Reduction of $6,000 reflects FY 1994 rescission.
- Increased TEC and TPC reflect BCP changes in scope that will address all areas of safety, waste handling, and compliance for the facility.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 91-E-600, Rehabilitation of Waste Management Building 306
Argonne National Laboratory, Argonne, Illinois

TEC: $11,274 a/
TPC: $11,966 a/

Start Date: 3rd Qtr. FY 1990 Completion Date: 3rd Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Prior Year	$ 2,129	+ 741 b/	$ 2,870	$ 916
1994	200	- 6 c/	194	347
1995	0		0	463
1996	787		787	1,300
1997	2,986		2,986	1,904
1998	4,375		4,375	3,934
1999	62		62	2,410

a/ Increased TEC and TPC reflect BCP changes in scope that will address all areas of safety, waste handling, and compliance for the facility.
b/ Reflects FY 1991 Reprogramming 91-R-15 (completed 9/24/91) to effect corrective action on construction projects which have been determined to be funded from inappropriate sources.
c/ FY 1994 rescission.

3. Narrative:

~~The purpose of the rehabilitation is to modify an existing facility to enable it to be in full compliance with current and anticipated regulations and to accommodate the expected growth in waste management operations necessary to allow continued growth at the site. This project was initiated as a CRP and reprogrammed into a line item on September 30, 1991.~~

~~The financial schedule and the TEC have been revised from the FY 1993 submittal due to budget constraints in FY 1994 and a need for operating funds in FY 1995. The FY 1994 request has been reduced by $1,365,000 compared to the FY 1993 submittal. $1,165,000 has been deferred until FY 1995. $200,000 has been transferred from line item to expense funding in FY 1994 to allow preparation of an Environmental Assessment and a Preliminary Safety Analysis Report. When this project was created by reprogramming several General Plant Projects, adequate expense funds were not identified for preparation of necessary safety and National Environmental Policy Act documentation. These changes reduce the TEC by $200,000, but do not change the TPC.~~

~~Since being reprogrammed into a line item, the scope of this project and line item project 91-E-602 has been reevaluated to ensure that these two projects will provide the facilities needed to support necessary waste management functions at Argonne National Laboratory-East. This reevaluation has delayed the start of detailed design and construction. The DOE is currently evaluating the resulting proposed changes. If approved through DOE baseline change control procedures, these changes will be submitted in FY 1995.~~

The purpose of this project is to create a facility which will conform to all waste handling regulations, support safe work conditions, increase the efficiency of waste management operations, and support the expected growth in waste management operations.

Phase I of this project will focus on improvements to the dry low-level radioactive waste processing area. Phase II will consist of rehabilitation of the remainder of the building including the liquid waste processing area. Decontamination will be required in many areas of the building prior to both Phase I and Phase II construction.

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(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Hazardous Waste Handling facility, Lawrence Berkeley Laboratory, Berkeley, California	2a. Project No.: 88-R-812 2b. Construction Funded

SIGNIFICANT CHANGES

- TEC increased from $12,625,000 to $13,125,000 because of additional funds required for revised fire protection system, estimation errors by A/E, and a depressed bidding climate in the San Francisco Bay Area.
- TPC decreased from $17,602,000 to $17,325,000 because of a reduction in Other Project Costs.
- Reduction of $171,000 reflects FY1994 rescission.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 88-R-812, Hazardous Waste Handling Facility, Lawrence Berkeley Laboratory, Berkeley, California — TEC: $13,125 a/ TPC: $17,325 a/

Start Date: 3rd Qtr. FY 1988 — Completion Date: 2nd Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	$ 4,631		$ 4,631	$ 552
1992	1,582		1,582	125
1993	0		0	1,628
1994	5,787	- 171 b/	5,616	1,250
1995	625		625	4,790
1996	671		671	4,780

a/ TEC increased from $12,625,000 to $13,125,000 because of additional funds required for revised fire protection system, estimation errors by A/E, and a depressed bidding climate in the San Francisco Bay Area. TPC decreased from $17,602,000 to $17,325,000 because of a reduction in Other Project Costs.

b/ Reduction due to rescission ($-171,000).

3. Narrative:

This project provides a remote site for an urgently needed hazardous waste handling facility including a specialized 12,900 gross square feet building and adjacent yard area.

The project will be located in upper Strawberry Canyon, north of the Buildings 74 and 83 Biosciences Complex. Construction will include an access road, site utilities, grading and paving of two yard areas, and a 12,900 GSF building for hazardous waste handling and storage. Yard lighting, fencing, storm drainage, and sanitary sewers will also be provided. Yard areas will be graded and sealed to provide containment.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
ENERGY SUPPLY RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: West Valley Demonstration Project West Valley, New York	2a. Project No.: a/ 2b. Operating Funded

SIGNIFICANT CHANGES

o No significant changes.

a/ It should be noted that this project is justified as an operating expense funded Construction Project. It has been reformatted only to comply with the revised DOE Order 5100.3. It is not intended to be funded as a construction line item (i.e., "39EK" account).

IV. B. Operating Expense Funded Project Summary

	New York State + DOE Share	DOE Share
Project Cost through Phase I:	$1,534,000	$1,377,000 a/
Project cost for Phase I:	$1,394,000 b/	$1,255,000
Project cost for Phase II:	TBD c/	

1. Project Title and Location: Project, West Valley Demonstration Project, West Valley, New York

Start Date: 1st Qtr. FY 1982 a/ Completion Date: 3rd Qtr. FY 1998 d/

2. Financial Schedule: (DOE only)

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	$ 770,036 e/		$ 768,854	$ 728,334
1994	124,000	- 3,654 f/	120,346	131,400
1995	125,127 g/		125,127	134,680
1996	122,100		122,100	127,100
1997	135,000		135,000	138,000
1998	141,400		141,400	141,400
1999	150,000		150,000	150,000
2000	162,692		163,874	175,787

a/ It should be noted that this project is justified as an operating expense funded Construction Project. It has been reformatted only to comply with the revised DOE Order 5100.3. It is not intended to be funded as a construction line item (i.e., "39EK" account). DOE share is through 3rd Qtr FY 1998 (See Section 12).

b/ Does not include Phase II costs, e.g., EIS activities, transportation, final decontamination and decommissioning activities also excludes FSFCA costs.

c/ Phase II costs include post-solidification operating, high-level waste storage and transportation, and final decontamination and decommissioning activities. A definitive estimate for the post-solidification phase (e.g., waste storage and transportation and final decontamination and decommissioning) will be prepared after coordination with the Nuclear Regulatory Commission and the State of New York and preparation of appropriate environmental documents. Project has requested $140,000,000 through 3rd Quarter FY 1998 for scopes associated with Phase II, Federal Facilities Compliance Act, Federal/State Facility Compliance Agreement (FSFCA) and RCRA3008 (h) Administrative Order on Consent.

d/ Completion date is through the completion of high-level waste solidification (Phase I). Completion date for the Phase II portion of the project has not been determined.

e/ Reflects a reduction of $1,574,000 as a general reduction mandated by Congress in the FY 93 Appropriation language and a reduction of $4,000,000 due to use of prior year balances per FY 1994 Appropriation Committee mark.

f/ Reflects a rescission cut of $3,654,000 for FY 1994.

g/ Reflects net reduction of $3,873,000 of which $2,120,000 for General Reduction and $1,753,000 current year reduction.

3. Narrative:

Public Law 96-368, West Valley Demonstration Project Act of 1980, directed the Department of Energy to carry out a high-level liquid nuclear waste management demonstration project at the Western New York Nuclear Service Center near West Valley, New York, for the purpose of demonstrating the solidification and preparation of high-level radioactive waste for disposal. By virtue of demonstrating the solidification of liquid high-level wastes (HLW), the hazards associated with continued storage of the liquid waste at the Center will be eliminated. Specifically, in FY ~~1995~~ 1996 Phase I (solidification) activities will include completion of ~~construction of the vitrification facility, completion of sludge wash operations, continuation of vitrification checkout and testing activities, operation of the LLW treatment facilities,~~ final integrated remote non-radioactive testing of the vitrification facility and the start of radioactive vitrification operations, and necessary program management, industrial health and safety, environmental protection, plant maintenance and operation, security and safeguards, and environmental monitoring. Phase II ~~planning~~ will include ~~publication of the final~~ continuation of the Phase II Environmental Impact Statement public review and comment resolution.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

Nuclear Materials and Facilities Stabilization

I. INTRODUCTION

The Office of Nuclear Materials and Facilities Stabilization, EM-60 (formerly the Office of Facility Transition and Management), was established in July 1992 within Environmental Management (EM) to coordinate and oversee the orderly transition of contaminated installations/facilities from other program offices to EM, once these properties are determined to be surplus to their mission.

The Office of Nuclear Materials and Facilities Stabilization, protects workers, the public, and the environment from exposure and contamination associated with radioactive and hazardous wastes and materials contained within these facilities. The majority of these surplus facilities were built for research purposes and were not designed for long-term storage of radioactive waste and materials. Many of these facilities have exceeded their design life and are in poor physical condition. Consequently, the surveillance and maintenance activities for these facilities and hazardous materials are expensive and labor intensive. To effectively deactivate the facilities, stabilize the materials, and reduce the funding requirements, an active program has been established for surplus facilities to identify, plan and accomplish projects that will properly store the materials and reduce the funding requirements. Many of the hazardous waste items contain fissile material and demand an unusually high level of prevention to avoid inadvertent criticality conditions from occurring. Some of the most noteworthy hazards include six nuclear reactors; hundreds of surplus buildings (most contain low level radioactive contamination); thousands of liters of radioactively contaminated acids; hundreds of irradiated, highly radioactive fuel tubes, and; thousands of kilograms of plutonium in various forms.

All maintenance and stabilization activities are conducted with full participation of involved stakeholders. The interests of stakeholder groups encompass environmental protection, individual safety and proper management of surplus facilities located close to large metropolitan areas. Their interests focus on activities with major facilities located in Idaho, Tennessee, Washington, and California.

The Office of Nuclear Materials and Facilities Stabilization is also actively involved in transitioning the workforce in both size and technical capability from the requirements to support the nuclear research mission, to the requirements to support the deactivation and stabilization mission.

II. BACKGROUND

The Department of Energy (DOE) has declared many of the facilities formerly used in the production of nuclear research surplus to current DOE programmatic needs. Many of these facilities are contaminated with nuclear and chemical hazards; therefore, they require a significant amount of surveillance and maintenance to adequately protect our workers and the environment from the existing hazards. Since this activity differs from the former research mission, the management of these facilities is being transferred to the Assistant Secretary for Environmental Management once the facility is declared surplus.

Deactivation is the process of placing a contaminated facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public and the environment until decommissioning is completed. Deactivation actions include the removal of fuel, draining and/or de-energizing of nonessential systems, removal of stored radioactive and hazardous materials and related actions, and at some facilities operational-type activities such as final process runs.

Additionally, the Office of Nuclear Materials and Facilities Stabilization is assigned landlord responsibility for selected facilities to ensure utilities and support services are maintained at an adequate level to support the environmental remediation activities at the site. Landlord activities typically include site infrastructure needs, i.e. roads, sewer systems, electrical distribution systems, communications, etc. as well as providing services such as medical, emergency response, and cafeteria services. In FY 1996, adequate funds are included to maintain essential operations.

This Overview presents the total program content, objectives, and accomplishments to date of the Energy Supply Research and Development related activities.

III. FISCAL YEAR 1996 OBJECTIVES

In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will achieve the following major items:

RICHLAND

- Complete 75 percent defueling of the Fast Flux Test Facility (FFTF) reactor and initiate removal of sodium
- Complete removal of fuel from Building 308 at the Test Reactor and Isotope General Atomics Plant

IDAHO

- Prepare a baseline for the Power Burst Reactor, the Advanced Reactivity Measurement Facility, the Coupled Fast Reactivity Measurement Facility and the Materials Test Reactor Canal

OAKLAND

- Initiate surveillance and maintenance activities for the six surplus facilities at the Energy Technology Engineering Center and plan for the removal of non-radioactive contaminated sodium

OAK RIDGE

- Complete deactivation of Buildings 3038, 3029, and 3026-C; dispose of eleven glove boxes and deactivate one hot cell in Building 3038-E; remove two radioactive processing systems for handling tritium and krypton in Building 3033

IV. "BASE" PROGRAM AND "NEW SCOPE" PROGRAM

The Office of Nuclear Materials and Facilities Stabilization's budget distinguishes responsibilities for existing facilities (i.e., the Base Program) from newly acquired facilities (i.e., New Scope Program). This distinction is an important aspect of the transition process from other DOE programs to provide safe stewardship and the necessary landlord services during transition.

The Base Program funds activities which began in previous budget years and continue into the FY 1996 budget request. This includes funding for ongoing activities at: the Hanford Site (Washington), the Idaho National Engineering Laboratory (Idaho), and the Oak Ridge Reservation (Tennessee).

The funding request for the Base Program is $67,012,000. This compares favorably with the adjusted appropriation of $73,336,000 in FY 1995. The decrease in the funding requested is due to productivity savings, which includes reductions in contractor employment.

Facilities at other sites, such as Oakland, are included in the New Scope request. The total budget request for the New Scope program is $16,671,000.

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V. PERFORMANCE BASED MANAGEMENT

The Office of Nuclear Materials and Facilities Stabilization achieved a major goal in 1995 by successfully structuring a performance based, Project Management process for stabilization activities. This approach clearly defines quantitative measures of cost, schedule and performance for stabilization projects. It employs sound project management and business practices, and profits from the "lessons-learned" from major government projects that have been incorporated into the process. This approach includes the following elements:

- Prioritization of all Stabilization and Landlord Activities
- Formal Project Management approach
- Objective Performance Measures

A. Prioritization of All Stabilization and Landlord Activities:

The Office of Nuclear Materials and Facilities Stabilization's FY 1996 Budget Request was developed using a common prioritization method. The method allowed budget activities to be ranked and ordered by individual field offices and to be integrated by all activities over all sites. This process evaluated eight aspects of each activity, including: (1) compliance requirements; (2) health and safety aspects; (3) environmental protection aspects; (4) legal drivers; (5) compliance with the Assistant Secretary for Environmental Management's mission goals; (6) the EM-60 performance measures; (7) other commitments and/or sound business judgment, and (8) projected cost savings. The prioritization method allowed detailed analysis of all activities by operations office, by category, and by individual Activity Data Sheet number. All base program funds $67,012,000 and some new scope funds for new sites were prioritized using this method.

The FY 1996 budget prioritization process validated the compliance basis for funded activities. Over 90 percent of the funded activities are designed to maintain a healthy and safe workplace for surplus activities. Over 80 percent is focused on minimizing significant impacts to the environment. All activities contribute to the Office of Environmental Management goals and are assessed with performance measures. This process has enabled management to state that the monies requested in the FY 1996 budget are justified, prioritized, and uniformly support our mission of facility stabilization and management.

B. Formal Project Management Approach:

A customized project management approach has been developed to formally structure all stabilization activities. This process produces clearly defined stabilization activities that possess start and completion dates, objective measures of project progress (i.e., cost, schedule and performance), and realistic estimates of total project cost. A thorough review of project end objectives is conducted to ensure the project is cost effective and supportive of the Department of Energy mission. The stabilization project development process described in this document was developed jointly by Headquarters and field organizations to provide a workable method for identifying stabilization projects and determining realistic costs and schedules.

The main mission of the Office of Nuclear Materials and Facilities Stabilization is to stabilize surplus facilities in a timely, cost effective, safe and fiscally responsible manner. Consequently, the stabilization project management process is not a rigid, bureaucratic approach to project management, but it is a dynamic, flexible approach that can respond to lessons learned and incorporate early, meaningful stakeholder involvement. Each stabilization project will present unique challenges and special programmatic needs; therefore, the project management approach must be flexible and responsive. This approach will also provide project managers with a common reference system for viewing, planning, and conducting stabilization activities.

The standardized stabilization project policies and requirements will also quantify the scope of the total stabilization challenge confronting the Office of Nuclear Materials and Facilities Stabilization and the Department of Energy.

C. Objective Performance Measures:

The performance measures developed by the Office of Nuclear Materials and Facilities Stabilization in the FY 1995 Performance Plan will continue into FY 1996. They relate to DOE's ongoing commitment to address both urgent risks and health and safety issues across the nuclear weapons complex. The Government Performance and Results Act (GPRA) of 1993 requires all Federal agencies to establish performance plans in order to provide direct linkage between the longer-term goals outlined in each program's Strategic Plan and the work conducted by Federal managers on a daily basis.

The following two specific performance measure formats were developed:

1. Increase the Number of Facilities Deactivated.

This performance indicator measures the total number of facilities at a particular site that will have completed the stabilization process by the end of the fiscal year. Progress toward this high-level measure will be assessed through the following contributing performance metrics:

- During FY 1995, the Office of Nuclear Materials and Facilities Stabilization will complete stabilization of seven facilities or buildings, and will make significant progress on nine other facilities. In addition, more than 23 stabilization projects will be formally-defined and placed under baseline monitoring in FY 1995

2. Reduce Surveillance and Maintenance (S&M) Costs.

This performance measure captures the reduction of S&M dollars expended at a facility during the stabilization process. These savings are captured in the overall efficiency and performance improvement savings reflected in the budget submittal.

In addition, there are three Environmental Management-wide performance measures to monitor Productivity/Efficiency, Risk Reduction/Safety and Health, and Customer Satisfaction/Stakeholder Involvement. These affect all offices within the Environmental Management Program.

Proposed FY 1996 performance measures are reflected in Section VI, Description of Program by Operations Office.

VI. DESCRIPTION OF PROGRAM BY OPERATIONS OFFICE:

The Office of Nuclear Materials and Facilities Stabilization manages its activities through several operations offices widely distributed across the United States. Some of these sites are located near population centers.

For each location, the major projected accomplishments for 1996, as well as the major accomplishments to date, are provided:

RICHLAND

The Richland Operations Office oversees activities at the Hanford Site, located near Richland, Washington. The Site occupies 560 square miles along the Columbia River in southeastern Washington. Since the early 1940's, nuclear reactors were used for research purposes. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Complete 75 percent defueling of the Fast Flux Test Facility reactor and initiate removal of hazardous liquid sodium

- Complete removal of 104 fuel assemblies from the Test Reactor and Isotope General Atomics Plant

- Conduct surveillances at the Fast Flux Test Facility to assess the condition of 13,000 kilograms of highly irradiated spent fuel in storage vessels and 32 green fuel assemblies. Reduce active plant systems from 75 to 69

Major accomplishments to date (1994-1995):

- Fast Flux Test Facility:
  - -- Completed shutdown plan; started defueling
  - -- Provided maintenance for 985,000 liters of hazardous liquid sodium, 2,274 liters of sodium potassium alloy, and 13,000 kilograms of spent fuel
  - -- Deactivated 21 active plant systems from 96 plant systems
  - -- Reduced the safety related daily log readings by 1,372
  - -- Reduced patrol personnel by 17
  - -- Reduced safety related annual calibrations by 163
  - -- Removed 120 reactor fuel assemblies
  - -- Received and tested 10 interim fuel storage casks

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TOTAL FUNDING BY INSTALLATION - RICHLAND
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Hanford Site, Washington	$ 60,656	$ 63,760	$ 59,500

IDAHO

The Idaho National Engineering Laboratory (INEL), established in 1949 as the National Reactor Testing Station, is situated on more than 890 square miles of the Snake River Plain in southeastern Idaho. Over the years, 52 reactors have been constructed and operated at the INEL. There are nine primary facilities at the INEL, as well as administrative, engineering, and research laboratories in Idaho Falls, approximately 50 miles east of the site. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishment:

- Prepare a baseline for the Power Burst Reactor, the Advanced Reactivity Measurement Facility, the Coupled Fast Reactivity Measurement Facility and the Materials Test Reactor Canal

TOTAL FUNDING BY INSTALLATION - IDAHO
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Idaho National Engineering Laboratory, Idaho	$ 0	$ 0	$ 8,135

OAKLAND

The Oakland Operations Office, formerly the San Francisco Operations Office, manages operations at the Laboratory for Energy-Related Health Research, the Lawrence Berkeley Laboratory, the Lawrence Livermore National Laboratory, the Energy Technology Engineering Center, and the Stanford Linear Accelerator Center. These facilities perform a number of diverse research and development activities. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishment:

- Surveillance and maintenance activities for the six high ranking surplus facilities at the Energy Technology Engineering Center and plan for the removal of non-radioactive contaminated sodium

TOTAL FUNDING BY INSTALLATION - OAKLAND
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Lawrence Berkeley Laboratory, California	$ 0	$ 0	$ 1,246
Energy Technology Engineering Center, California	0	0	672
TOTAL, OAKLAND	$ 0	$ 0	$ 1,918

OAK RIDGE

The Oak Ridge Operations Office manages the Oak Ridge National Laboratory, the Y-12 Plant, and the surplus enrichment plants at Oak Ridge, Tennessee; and also the surplus high assay enrichment plant at Portsmouth, Ohio. The Oak Ridge Reservation is located 20 miles west of Knoxville in eastern Tennessee. Many of the facilities are contaminated and require continuous monitoring to assure public protection from unplanned releases. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Conduct surveillances and maintenance actions in the 19 isotope facilities (contain 1,260,000 curies of radioactive materials) and 10 additional facilities which contain reactor fuel
- Provide water, steam, electricity and compressed air to 25 isotope facilities and high ranking facilities
- Complete deactivation of Buildings 3038, 3029 and 3026-C; dispose of eleven glove boxes and deactivate one hot cell in Building 3038-E; remove two radioactive processing systems for handling tritium and krypton in Building 3033

Major accomplishments to date (1994-1995):

- Completed decontamination and fixation of contamination in the storage and service facility (Building 3036)
- Initiated deactivation of the Cobalt Storage Facility (Building 3029)
- Removed tritium lights from the Krypton Enrichment Facility (Building 3026-C)
- Deactivated six hot cells in specified buildings

TOTAL FUNDING BY INSTALLATION - OAK RIDGE
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Oak Ridge National Engineering Laboratory, Tennessee	$ 8,541	$ 9,576	$ 14,130

VII. FISCAL YEAR 1996 BUDGET STRUCTURE:

The Office of Nuclear Materials and Facilities Stabilization budget is structured in two appropriations. The first appropriation, the Defense Environmental Restoration and Waste Management, focuses on activities related to the management and stabilization of weapons related activities. The second appropriation, Energy Supply, Research and Development, focuses on DOE activities independent of the weapons related program.

Within each appropriation, the Office of Nuclear Materials and Facilities Stabilization accomplishes its mission by funding activities through various categories. The Energy Supply, Research and Development categories fund activities in the following three categories:

1. Program Integration:

Funds all activities that accomplish transition program and deactivation project planning. This includes all actions associated with transferring Defense and other facilities to EM, with the exception of landlord-related functions and deactivation project design efforts. This category focuses on the planning, development and generation of a transition program and deactivation project documentation and plans.

2. Surveillance and Maintenance:

Funds all activities that maintain surplus and transferred buildings with required functions (i.e., surveillance and maintenance of fire, safety and life support systems, building support and essential services as specified by Operational Safety Requirements). This account includes system/facility monitoring, corrective and preventive maintenance.

3. Deactivation/Compliance Actions:

Funds all activities that remove surplus materials, chemicals, and supplies to stabilize contamination, including removal of hazardous, mixed and radioactive wastes. These actions are undertaken to reduce the cost of surveillance and maintenance and hazardous material stabilization.

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Nuclear Materials and Facilities Stabilization

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Program Integration					
Operating Expenses	$ 1,634	$ 1,200	$ 0	$ 1,200	$ 2,916
Surveillance and Maintenance					
Operating Expenses	$ 59,792	$ 53,963	$ 0	$ 53,963	$ 40,017
Capital Equipment	194	350	0	350	200
Subtotal, Surveillance and Maintenance	$ 59,986	$ 54,313	$ 0	$ 54,313	$ 40,217
Deactivation/Compliance Actions					
Operating Expenses	$ 7,587	$ 19,062	$ -1,239	$ 17,823	$ 40,550
TOTAL	$ 69,197	$ 74,575	$ -1,239 a/	$ 73,336	$ 83,683
Summary					
Operating Expenses	$ 69,003	$ 74,225	$ -1,239	$ 72,986	$ 83,483
Capital Equipment	194	350	0	350	200
Total Program	$ 69,197	$ 74,575	$ -1,239	$ 73,336	$ 83,683
Staffing (FTEs)	0	0	0	0	0

a/ Reflects general reduction.

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SUMMARY OF CHANGES

Nuclear Materials and Facilities Stabilization

FY 1995 Appropriation	$ 74,575
· Adjustment - General Reduction.	-1,239
FY 1995 Adjusted	$ 73,336
· Transfer	0
FY 1995 Comparable	$ 73,336
Program Integration	
· Provides funding to support high ranking Surplus Facility Inventory and Assessment assets at Oak Ridge and Oakland	$ +1,413
· Increase level of effort for the Oak Ridge isotope facilities	+298
· Reduction due to completion of activities associated with the Fast Flux Test Facility at Richland	-800
Surveillance and Maintenance	
· Reflects requirements for high ranking Surplus Facility Inventory and Assessment assets at Oak Ridge, Richland and Oakland's Lawrence Berkeley Laboratory and Energy Technology Engineering Center	+5,199
· Reduces surveillance and maintenance activities associated with the Fast Flux Test Facility at Richland	-19,661
· Provides funding for the Power Burst Reactor at Idaho	+2,064
· Reduce routine surveillance and maintenance activites at Oak Ridge	-893
Deactivation/Compliance Actions	
· Reflects requirements for high ranking Surplus Facility Inventory and Assessment assets at Idaho, Oak Ridge, Oakland, and Richland	+7,995
· Increase reflects support of activities for removal of surplus materials and chemicals; stabilize contamination at Oak Ridge and Richland	+14,732
FY 1996 Congressional Budget Request	$ 83,683

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FIELD OFFICE FUNDING BY SITE

Nuclear Materials and Facilities Stabilization (Non-Defense)

Field Office	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Idaho Operations Office					
Idaho National Engineering Laboratory	$ 0	$ 0	$ 0	$ 0	$ 8,135
Oak Ridge Operations Office					
Oak Ridge National Laboratory	$ 8,541	$ 9,780	$ -204	$ 9,576	$ 14,130
Oakland Operations Office					
Lawrence Berkeley Laboratory	$ 0	$ 0	$ 0	$ 0	$ 1,246
Energy Technology Engineering Center	$ 0	$ 0	$ 0	$ 0	$ 672
Subtotal Oakland Operations Office	$ 0	$ 0	$ 0	$ 0	$ 1,918
Richland Operations Office					
Hanford Site	$ 60,656	$ 64,795	$ -1,035	$ 63,760	$ 59,500
Total Nuclear Materials and Facilities Stabilization (Non-Defense)	$ 69,197	$ 74,575	$ -1,239	$ 73,336	$ 83,683

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BASE PROGRAM / NEW SCOPE

Nuclear Materials and Facilities Stabilization (Non-Defense)

	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
SUMMARY					
Program Integration	$ 1,624	$ 1,200	$ 0	$ 1,200	$ 2,916
Surveillance and Maintenance	59,986	54,313	0	54,313	40,217
Deactivation/Compliance Actions	7,587	19,062	-1,239	17,823	40,550
Total - Nuclear Materials and Facilities Stabilization (Non-Defense)	$ 69,197	$ 74,575	$ -1,239	$ 73,336	$ 83,683
BASE PROGRAM					
Program Integration	$ 1,624	$ 1,200	$ 0	$ 1,200	$ 1,503
Surveillance and Maintenance	59,986	54,313	0	54,313	32,954
Deactivation/Compliance Actions	7,587	19,062	-1,239	17,823	32,555
Total Base Program	$ 69,197	$ 74,575	$ -1,239	$ 73,336	$ 67,012
NEW SCOPE					
Program Integration	$ 0	$ 0	$ 0	$ 0	$ 1,413
Surveillance and Maintenance	0	0	0	0	7,263
Deactivation/Compliance Actions	0	0	0	0	7,995
Total New Scope	$ 0	$ 0	$ 0	$ 0	$ 16,671

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(Tabular dollars in thousands, narrative in whole dollars)

Nuclear Materials and Facilities Stabilization (Non-Defense)

Field Office	FY 1996 Base	FY 1996 New Scope	FY 1996 Total
Idaho Operations Office (Idaho National Engineering Laboratory)	0	8,135	8,135
Oak Ridge Operations Office (Oak Ridge National Laboratory)	9,257	4,873	14,130
Oakland Operations Office (Lawrence Berkeley Laboratory, Energy Technology Engineering Center)	0	1,918	1,918
Richland Operations Office (Hanford Site)	57,755	1,745	59,500
Total - Nuclear Materials and Facilities Stabilization (Non-Defense)	$67,012	$16,671	$83,683

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(Tabular dollars in thousands, narrative in whole dollars)

INSTALLATION FUNDING

Nuclear Materials and Facilities Stabilization (Non-Defense)

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Summary			
Idaho National Engineering Laboratory	0	0	8,135
Oak Ridge National Laboratory	8,541	9,576	14,130
Lawrence Berkeley Laboratory	0	0	1,246
Energy Technology Engineering Center	0	0	672
Hanford Site	60,656	63,760	59,500
Total - Nuclear Materials and Facilities Stabilization (Non-Defense)	$69,197	$73,336	$83,683
Operating Expenses			
Idaho National Engineering Laboratory	0	0	8,135
Oak Ridge National Laboratory	8,541	9,576	14,130
Lawrence Berkeley Laboratory	0	0	1,246
Energy Technology Engineering Center	0	0	672
Hanford Site	60,462	63,410	59,300
Total Operating Expenses	$69,003	$72,986	$83,483
Capital Equipment			
Hanford Site	194	350	200
Total - Nuclear Materials and Facilities Stabilization (Non-Defense)	$69,197	$73,336	$83,683

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ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Program Integration

The Program Integration category funds all activities that accomplish transition program and deactivation project planning. This includes all actions associated with transferring surplus facilities to Environmental Management, with the exception of landlord-related functions and deactivation project design efforts. This category focuses on the planning, development and generation of transition programs and deactivation project documentation and plans.

Specific activities funded within this category include:

- Development of site integration plans
- Implementing and integrating transition activity plans
- Transition program management to include: activity data sheet generation, project management, quality assurance, program and budget planning, scheduling, cost estimating, identification of environmental support requirements, record control, and characterization activities
- Developing necessary program documents, such as procedures, performance standards, performance measures, etc.
- Development of deactivation project planning documentation, including the Project Execution Plan (PEP) and the project requirements document

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II. A. Summary Table: Program Integration

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
OAK RIDGE				
Oak Ridge National Laboratory	$ 0	$ 400	$ 1,075	$ 675
Subtotal, OAK RIDGE	$ 0	$ 400	$ 1,075	$ 675
OAKLAND				
Lawrence Berkeley Laboratory	$ 0	$ 0	$ 1,036	$ 1,036
Subtotal, OAKLAND	$ 0	$ 0	$ 1,036	$ 1,036
RICHLAND				
Hanford Site	$ 1,624	$ 800	$ 805	$ 5
Subtotal, RICHLAND	$ 1,624	$ 800	$ 805	$ 5
Total, Program Integration	$ 1,624	$ 1,200	$ 2,916	$ 1,716

II. B. Laboratory and Facility Funding Table: Program Integration

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Hanford Site	$ 1,624	$ 800	$ 805	$ 5
Lawrence Berkeley Lab	0	0	1,036	1,036
Oak Ridge National Lab	0	400	1,075	675
Total, Program Integration	$ 1,624	$ 1,200	$ 2,916	$ 1,716

1969

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Integration			
OAK RIDGE			
Oak Ridge National Laboratory	No activity.	Provides contractor support for performing routine budgeting, planning and scheduling activities for 19 isotope facilities. Issue the Isotopes Facility Work Plan. Develop an overall strategy of transferring facilities into the EM program.	Continue to provide contractor support for performing routine budgeting, planning and scheduling activities for 19 isotope facilities. Revise the Isotopes Facility Work Plan. Initiate an assessment of Building 3517 upgrades required to allow limited packaging operation and shipment of surplus isotope materials to the Waste Encapsulation Storage Facility located at Hanford. ($698)
	No activity.	Activities funded by Energy Research, Nuclear Energy, and Laboratory Management.	Support initiation ofInitiate budgeting, planning and scheduling activities for an additional 31 high ranking facilities. Identify high payback facility projects. ($377)
	$ 0	$ 400	$ 1,075
Subtotal, OAK RIDGE	$ 0	$ 400	$ 1,075
OAKLAND			
Lawrence Berkeley Laboratory	Activities funded by Energy Research.	Activities funded by Energy Research.	Provide co-funding with Energy Research for program planning to facilitate the movement of shield blocks from the Bevelac facility to allow reuse of the facility and minimization of waste. ($1,036)
	$ 0	$ 0	$ 1,036
Subtotal, OAKLAND	$ 0	$ 0	$ 1,036

1970

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
RICHLAND			
Hanford Site	Provided for the Fast Flux Test Facility (FFTF), Building 308, Test Reactor (TRIGA) fuel, and Nuclear Energy (NE) Legacy management, oversight, budget planning and business support. Activities included the development of Activity Data Sheets, Fiscal Year Work Plans, development of FFTF Shutdown Program Plan and Activity Based Costing (ABC) Resource Loaded Schedule and FFTF Transition Project Plan. ($1,624)	Provide for FFTF, Building 308, TRIGA fuel, and NE Legacy management, oversight, budget planning and business support. Activities include the development of Activity Data Sheets, Fiscal Year Work Plans, Revision I of the FFTF Transition Project Plan and updated ABC Resource Loaded Schedule. ($800)	Provide for FFTF, Building 308, TRIGA fuel, and NE Legacy Management, oversight, budget planning and business support. Activities include the development of Activity Data Sheets, Fiscal Year Work Plans, Revision II of the FFTF Transition Project Plan and update ABC Resource Loaded Schedule. ($805)
	$ 1,624	$ 800	$ 805
Subtotal, RICHLAND	$ 1,624	$ 800	$ 805
Program Integration	$ 1,624	$ 1,200	$ 2,916

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Surveillance and Maintenance

The Surveillance and Maintenance (S&M) category funds all activities and related processes necessary to ensure that surplus facilities, or portions thereof, are maintained in a safe condition; such as, surveillance of safety controls; maintenance of fire, safety and life support systems; and building support and essential services to be performed as specified by Operational Safety Requirements (OSR). This category also includes system/facility monitoring, corrective and preventive maintenance, and safeguards and security.

All non-Deactivation/Landlord-related activities undertaken by the Office of Nuclear Materials and Facilities Stabilization (EM-60) in response to binding commitments including compliance orders, court decisions or consent agreements with Federal, state and local authorities; and DOE Directives related to S&M activities is supported in this category. This includes those activities that EM-60 is required to accomplish either by law or binding agreements.

Specific activities funded within this category include:

- Maintenance (preventive and corrective) of fire, safety and life support systems specific to a facility, building or process
- Surveillance of safety control systems
- Safeguards and security support
- Maintenance of vital safety systems which are specific to a facility, building, or process in a condition such that it performs as specified in a related OSR
- Administrative, facility, building or technical support and operations management
- Maintenance of the formally-defined Facility Safety Envelope
- Federal Facility Compliance Act (FFCA)/Interagency Agreement requirements
- Facility-specific environmental compliance activities (e.g., DOE Order 5400.1)
- Radiation protection requirements
- Compliance with fire protection requirements or national fire codes (e.g., National Fire Protection Agency (NFPA))
- Facility-specific environmental monitoring (e.g., air emission, wastewater discharges)
- Permitting requirements
- OSHA compliance activities
- Conduct of Operations (where applicable) pursuant to DOE Order 5480.19

I. Surveillance and Maintenance (Cont'd)

- Compliance with electrical safety requirements or national electric codes
- Other Environmental, Safety and Health (ES&H)-related drivers or activities

1973

II. A. Summary Table: Surveillance and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
IDAHO				
Idaho National Engineering Laboratory	$ 0	$ 0	$ 2,064	$ 2,064
Subtotal, IDAHO	$ 0	$ 0	$ 2,064	$ 2,064
OAK RIDGE				
Oak Ridge National Laboratory	$ 8,541	$ 5,718	$ 8,842	$ 3,124
Subtotal, OAK RIDGE	$ 8,541	$ 5,718	$ 8,842	$ 3,124
OAKLAND				
Lawrence Berkeley Laboratory	$ 0	$ 0	$ 210	$ 210
Energy Technology Engineering Center	0	0	672	672
Subtotal, OAKLAND	$ 0	$ 0	$ 882	$ 882
RICHLAND				
Operating Expenses	$ 51,251	$ 48,245	$ 28,329	$ -20,016
Capital Equipment	194	350	200	-150
Subtotal, RICHLAND	$ 51,445	$ 48,595	$ 28,429	$ -20,166
Total, Surveillance and Maintenance	$ 59,986	$ 54,313	$ 40,217	$ -14,096

1974

II. B. Laboratory and Facility Funding Table: Surveillance and Maintenance

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Energy Technology Engineering Center	$ 0	$ 0	$ 672	$ 672
Hanford Site	51,445	48,595	28,429	-20,166
Idaho National Engineering Lab	0	0	2,064	2,064
Lawrence Berkeley Lab	0	0	210	210
Oak Ridge National Lab	8,541	5,718	8,842	3,124
Total, Surveillance and Maintenance	$ 59,986	$ 54,313	$ 40,217	$ -14,096

1975

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Surveillance and Maintenance			
IDAHO			
Idaho National Engineering Laboratory	No activity.	No activity.	Provide required surveillance and maintenance activities for the Power Burst Reactor and auxiliary facilities; Advanced Reactivity Measurement Facility; and the Coupled Fast Reactivity Measurement Facility. ($2,064)
	$ 0	$ 0	$ 2,064
Subtotal, IDAHO	$ 0	$ 0	$ 2,064
OAK RIDGE			
Oak Ridge National Laboratory	Conducted routine and unplanned maintenance checks and calibrations on 1,900 pieces of mechanical equipment and instrumentation. Performed weekly radiological protection surveys for 19 isotope facilities containing 1,420,000 curies of radioactive materials. Provided water, steam, electricity and compressed air to 17 isotope facilities. ($8,541)	Conduct routine and unplanned maintenance checks and calibrations on approximately 1,800 pieces of mechanical equipment and instrumentation. Perform weekly radiological protection surveys for 19 isotope facilities containing approximately 1,320,000 curies of radioactive materials. Provide water, steam, electricity and compressed air to 17 isotope facilities. ($5,716)	Perform weekly radiological protection surveys for 19 isotope facilities containing approximately 1,260,000 curies of radioactive materials; and 10 of the 31 facilities which contain reactor fuel, radioactive sources and contaminated control areas. Provide water, steam, electricity and compressed air to 25 isotope facilities and high ranking facilities. ($4,825)
	Activities funded by Energy Research.	Activities funded by Energy Research.	Conduct routine and unplanned maintenance checks and calibrations on approximately 1,600 pieces of mechanical equipment and instrumentation in the 19 isotope facilities, and 3,100 pieces of mechanical equipment and instrumentation in 31 facilities which ranked high on the Surplus Facility Inventory Assessment. ($4,017)
	$ 8,541	$ 5,716	$ 8,842

1976

III. Surveillance and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, OAK RIDGE	$ 8,541	$ 5,718	$ 8,842
OAKLAND			
Lawrence Berkeley Laboratory	Activities funded by Energy Research.	Activities funded by Energy Research.	Provide co-funding with Energy Research for the movement of shield blocks from the Bevelac facility to allow reuse of the facility and minimization of waste. ($210)
	$ 0	$ 0	$ 210
Energy Technology Engineering Center	Activities funded by Nuclear Energy.	Activities funded by Nuclear Energy.	Provide surveillance and maintenance services to maintain the safety envelope consistent with deactivation of high ranking surplus facilities at the Energy Technology Engineering Center including the Sodium Pump Test Facility, the Sodium Laboratory, and the General Test Facility. ($672)
	$ 0	$ 0	$ 672
Subtotal, OAKLAND	$ 0	$ 0	$ 882
RICHLAND			
Operating Expenses	Maintained the Fast Flux Test Facility (FFTF), Building 308, and the Test Reactor (TRIGA) fuel and Nuclear Energy (NE) legacies in an industrially safe and compliant configuration in preparation for final shutdown. The FFTF activities included: maintaining the surveillance and maintenance of plant systems necessary to maintain: 260,000 gallons of hazardous liquid sodium, 600 gallons of sodium potassium alloy and thirteen metric tons of spent fuel; and completion of a Technical Specification Review (TSR) to identify potential surveillance and maintenance savings. Building 308 activities included the weekly monitoring of 104 fuel assemblies and related safety	Maintain FFTF, NE legacies, Building 308 and TRIGA fuel activities in an industrially safe and environmentally compliant condition. Accomplishments resulting from an FFTF TSR included: deactivate 20 operating plant systems from a total of 95; 1,372 fewer safety related daily log readings from a total of 1,430; 17 fewer patrol personnel from a total of 32; and 163 reductions in safety related annual calibrations from a total of 166. Maintain surveillance of 260,000 gallons of hazardous liquid sodium, 600 gallons of sodium potassium alloy and thirteen metric tons of spent fuel. ($48,245)	Maintain FFTF, Building 308 and TRIGA fuel activities in an industrially safe and environmentally compliant condition. The FFTF safety related daily log is reduced to 43 and active plant systems is further reduced from a total of 75 to 69; thus ending the requirements for Technical Specification Calibrations. ($27,929)

1977

III. Surveillance and Maintenance (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	systems within the TRIGA Test Reactor. ($51,251)		
	Activities funded by Nuclear Energy.	Activities funded by Nuclear Energy.	Building 309, a surplus radiologically contaminated facility, is transferred from NE. Activities include: health physics, equipment and security monitoring, contaminated area surveys, safe conduct of operations, and oversight functions. Remove TRIGA fuel from Building 308. Maintain surveillance of 260,000 gallons of hazardous liquid sodium and 600 gallons of sodium potassium alloy. ($300)
	$ 51,251	$ 48,245	$ 28,229
Capital Equipment	Procured reactor immersion heaters, fuel offload chromatograph, and other safety related equipment spares necessary to provide safety and operational compliance.	Procure vital equipment necessary to provide safety and operational compliance. Equipment identified includes: controls and spare parts for the nitrogen blower heater unit (required to maintain the sodium molten in the bottom of the reactor vessel during drain); special tooling for reactor vessel sodium drain; and reserve for replacement of failed equipment.	Procure vital equipment necessary to provide safety and operational compliance and the procurement of equipment to support deactivation activities. Activity includes equipment placed on the annual priority list such as: helium leak detectors, six chiller controls, and radio controls for MASF 5-ton crans.
	$ 194	$ 350	$ 200
Subtotal, RICHLAND	$ 51,445	$ 48,595	$ 28,429
Surveillance and Maintenance	$ 59,986	$ 54,313	$ 40,217

1978

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Deactivation/Compliance Actions

The Deactivation/Compliance Actions category funds all activities that remove surplus materials, chemicals, supplies, classified equipment and documents and stabilized contamination, including removal of hazardous, mixed and radioactive wastes. These actions are undertaken both to reduce the physical risks and hazards at these facilities and to decrease the associated costs of, in particular, surveillance and maintenance (i.e., the "mortgage"). This category also includes design efforts associated with approved deactivation projects.

Specific activities funded within this category include:

- Nuclear materials management programs and operations, including surplus material management
- Material stabilization programs
- Surplus facility conversion programs
- Removal of radioactive, hazardous or mixed wastes
- Storage tank maintenance (i.e., which is facility- or process-specific)
- Classified material removal activities
- Deactivation project design efforts following approval of Key Decision (KD) 2
- Deactivation-related activities specifically undertaken in response to binding commitments (including compliance orders, court decisions and/or consent agreements) with Federal, state and local authorities

II. A. Summary Table: Deactivation/Compliance Actions

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
IDAHO				
Idaho National Engineering Laboratory	$ 0	$ 0	$ 6,071	$ 6,071
Subtotal, IDAHO	$ 0	$ 0	$ 6,071	$ 6,071
OAK RIDGE				
Oak Ridge National Laboratory	$ 0	$ 3,458	$ 4,213	$ 755
Subtotal, OAK RIDGE	$ 0	$ 3,458	$ 4,213	$ 755
RICHLAND				
Hanford Site	$ 7,587	$ 14,365	$ 30,266	$ 15,901
Subtotal, RICHLAND	$ 7,587	$ 14,365	$ 30,266	$ 15,901
Total, Deactivation/Compliance Actions	$ 7,587	$ 17,823	$ 40,550	$ 22,727

1980

II. B. Laboratory and Facility Funding Table: Deactivation/Compliance Actions

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Hanford Site	$ 7,587	$ 14,365	$ 30,266	$ 15,901
Idaho National Engineering Lab	0	0	6,071	6,071
Oak Ridge National Lab	0	3,458	4,213	755
Total, Deactivation/Compliance Actions	$ 7,587	$ 17,823	$ 40,550	$ 22,727

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Deactivation/Compliance Actions			
IDAHO			
Idaho National Engineering Laboratory	No activity.	No activity.	Begin preparations for the deactivation/disposition along with the removal of 2,500 fuel elements from three satelite facilities and consolidate the fuel into control storage locations at the Idaho Chemical Processing Plant.
	$ 0	$ 0	$ 6,071
Subtotal, IDAHO	$ 0	$ 0	$ 6,071
OAK RIDGE			
Oak Ridge National Laboratory	No activity.	Complete deactivation of Buildings 3030, 3031, 3118 and 3033A. Remove 6,000 curies of tritium-contaminated waste from Buildings 3026-C and 7025. Initiate deactivation of Buildings 3026, 3029 and 3038. ($3,458)	Complete deactivation of Buildings 3038, 3029 and 3026-C. Dispose of 11 glove boxes and deactivate one hot cell in Building 3038-E. Remove two radioactive processing systems for handling 3H and 85 Kr in Building 3033. Initiate removal of cobalt inventory from Building 3010. ($3,734)
	No activity.	No activity.	Dispose of surplus contaminated equipment in Buildings 3010, 3019B, 7700 and 7602. Perform facility assessments to provide characterization data necessary to properly identify facility problems. ($479)
	$ 0	$ 3,458	$ 4,213
Subtotal, OAK RIDGE	$ 0	$ 3,458	$ 4,213

III. Deactivation/Compliance Actions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
RICHLAND			
Hanford Site	Initiated transition activities for Fast Flux Test Facility (FFTF), Building 309, Test Reactor (TRIGA) fuel, Resource Conservation and Recovery Act (RCRA) Closures, and Nuclear Energy (NE) legacies. Activities included: removal of 44 fuel assemblies from the FFTF reactor; shipment of 78 drums of surplus sodium resulting in a cost savings of approximately $390,000; submittal of an Accelerated FFTF Shutdown Plan which reduced shutdown costs by an estimated $53 million, began the FFTF Auxiliary System shutdown and initiated the National Environmental Policy Act (NEPA) and RCRA documentation for NE Legacy sodium test loop disposal. ($7,567)	Initiate the following deactivation and compliance activities at FFTF: commence modifications for fuel washing; remove remaining 76 reactor fuel assemblies; receive and test 10 Interim Fuel Storage Casks; contract for an additional 47 casks; continue Auxiliary System shutdown; provide for necessary NEPA and other regulatory requirements related to plant shutdown; reduce active FFTF plant systems from 96 to 75. Building 308 activities include the completion of TRIGA storage\shipping cask for disposition of spent fuel. ($8,948)	Complete washing and storing the first 50 off-loaded FFTF fuel assemblies, begin draining secondary system sodium to primary systems, and reducing active plant systems from 75 to 69. Complete the removal of TRIGA fuel from Building 308 in preparation for final shutdown and removal of 4,600 gallons of non-irradiated sodium from Buildings 1720-DR and 3718-M. ($23,621)
	No activity.	Initiate an operating expense project for the design and construction of two subprojects which are required to maintain an accelerated deactivation schedule for the FFTF. The first project will provide for the construction of an Interim Storage Area (ISA) for irradiated fuel components. The second project will complete the design and initiate the construction of a Sodium Storage Facility (SSF) which will provide safe interim storage for 260,000 gallons of hazardous liquid sodium. ($5,417)	Continue support of an operating expense project for the design and construction to maintain an accelerated deactivation schedule for the FFTF. The Sodium Storage Facility (SSF) was initiated in FY 1995 and will be completed in FY 1997 providing safe interim storage for 260,000 gallons of hazardous liquid sodium. ($5,200)
	Activities funded by Nuclear Energy (NE).	Activities funded by Nuclear Energy.	Building 309 is transferred from NE. Shutdown activities include initiating the removal and disposition of 12 ion exchange columns from the Plutonium Recycle Test Reactor (PRTR) vault storage. ($1,445)

III. Deactivation/Compliance Actions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site (Cont'd)	$ 7,587	$ 14,365	$ 30,266
Subtotal, RICHLAND	$ 7,587	$ 14,365	$ 30,266
Deactivation/Compliance Actions	$ 7,587	$ 17,823	$ 40,550

Defense Environmental Restoration and Waste Management

1985

DEPARTMENT OF ENERGY

FY 1996 CONGRESSIONAL BUDGET REQUEST

ENVIRONMENTAL MANAGEMENT

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Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Defense Environmental Restoration and Waste Mgmt					
Corrective Activities	7.2	7.2	0.5	0.5	3.4
Environmental Restoration	1,454.5	1,454.5	1,379.9	1,379.9	1,576.0
Waste Management	2,763.6	2,763.6	2,673.0	2,673.0	2,501.6
Technology Development	393.8	393.8	417.4	417.4	390.5
Transportation Management	19.5	19.5	20.7	20.7	16.2
Program Direction	91.9	91.9	85.0	85.0	—
Facility Transition & Management	610.4	1,794.4	765.5	1,614.3	1,596.0
Compliance and Program Coordination	—	—	—	—	81.3
Analysis, Education, and Risk Management	—	—	—	—	157.0
Subtotal, Defense Environment Restoration & Waste Mgmt	5,340.9	6,524.9	5,342.0	6,190.8	6,322.0
Use of prior year balances & other adjustments	-170.8	-459.9	-249.3	-585.8	-313.9
Total, Defense Environmental Restoration & Waste Mgmt	5,170.1	6,065.0	5,092.7	5,605.0	6,008.0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Defense Environmental Restoration and Waste Management

For Department of Energy expenses, including the purchase, construction and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense environmental [restoration and waste] management activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; and the purchase of passenger motor vehicles (not to exceed [87 of which 67] 7 are for replacement only [including 6 police-type vehicles]), [$5,092,691,000] $6,008,002,000, to remain available until expended: *Provided*, That, notwithstanding any other law, funds appropriated under this heading may be made available to pay $350,000 into the Hazardous Substances Response Trust for a stipulated penalty assessed in accordance with Part 19 of the "Federal Facility Agreement and Consent Order" entered into by the Department, the U.S. Environmental Protection Agency, and the State of Colorado for the Rocky Flats site in Colorado.

Further, for the foregoing purposes, $6,297,364,000, to become available on October 1, 1996 and remain available until expended.

EXPLANATION OF CHANGE

This language includes an update to support fines and penalties assessed against the program at Rocky Flats. Also, it proposes FY 1997 funding levels per the requirement to submit two-year budgets for National Security Programs.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
OVERVIEW
ENVIRONMENTAL MANAGEMENT

The Environmental Management (EM) program is responsible for identifying and reducing risks and managing waste at sites where the Department carried out nuclear energy or weapons research and production activities which resulted in radioactive, hazardous, and mixed waste contamination. The number of sites and facilities in the EM program continues to grow significantly as the Department shifts its focus from primarily production efforts to environmental management activities. The EM program is budgeted under three appropriation accounts, the Defense Environmental Restoration and Waste Management account, the Energy Supply, Research and Development account, and the Uranium Enrichment Decontamination and Decommissioning Fund account. Under this account, the EM program includes waste management functions; environmental restoration activities; technology development efforts; nuclear materials and facilities stabilization functions; and a variety of crosscutting initiatives, including major emphasis on public participation.

When the EM program was established in late 1989, it inherited a legacy with significant environmental and political challenges. The 137 Environmental Management sites in 34 States have different functions, geographies, and degrees and types of contamination. These sites include contaminated surface water or groundwater, soil, and structures totalling over 3,300 square miles of contaminated area. No other nation, government, or private entity has attempted a cleanup program of this scope and magnitude before.

The EM program must meet a significant number of legal requirements which result from 103 Departmental compliance agreements and a multitude of Federal, State, and local health and safety environmental statutes. Bridging the gap between requirements in existing agreements and resources will be a challenge requiring increased cost savings through better project performance and cost containment. The program's main challenge is to develop a strategy, within existing and projected technical and financial constraints, that enables the Department to meet its commitments to the American people.

To meet this challenge, the EM program has identified six main goals:

- Eliminate and manage the urgent risk in the system;
- Emphasize health and safety for our workers and the public;
- Establish a system that increases managerial and financial control;
- Demonstrate tangible results;
- Focus technology development efforts on identifying and overcoming obstacles to progress; and,
- Establish a stronger partnership between the Department of Energy and its stakeholders.

To help achieve these goals, the EM program has made a commitment to performance measurement and to meeting the requirements of the Government Performance and Results Act of 1993. In response to this Act and in keeping with efforts to improve management practices, the Secretary of Energy has directed the Department to expeditiously adopt performance-based budgeting. The intent of performance-based budgeting is to show a direct relationship between program dollars (resources) expended and results achieved. The EM program will continue to build on these efforts and focus its resources on meeting its goals.

FY 1996 Budget Request

The EM FY 1996 budget request is $6,322 million, which is offset by the use of prior year balances of $277 million and a $37 million pension refund for a net budget authority request of $6,008 million (see Exhibit 1). Included in this request is $826 million for activities at Savannah River, Mound, Pinellas, and other sites managed by Defense Programs and other departmental elements prior to FY 1996; and an increase of $216 million to provide for the Federal Government contribution to the Uranium Enrichment Decontamination and Decommissioning Fund (see Exhibit 2.)

Federal Employment

The FY 1996 budget request for EM reflects 3,916 Full-Time Equivalents (FTEs), an increase of 816 over FY 1995 (see Exhibit 3). Included in this increase are 400 FTEs to complete EM's three-year pilot program; the transfer of 372 FTEs from Defense Programs at the Savannah River Site in South Carolina; the transfer of 39 FTEs from Defense Programs at the Mound Plant in Ohio; and an increase of 5 FTEs to reflect inter-departmental adjustments.

Field staffing levels in FY 1996 increase by 840 FTEs, while Headquarters staffing decreases by 24 FTEs. The current emphasis is to significantly strengthen activities in the field in order to provide improved management and more tangible results. Funding for the salaries of the 400 FTEs to be hired to complete EM's pilot program will be reallocated from productivity savings in FY 1996. Such savings would be in addition to the $604 million in productivity savings discussed below.

Contractor Reductions

The FY 1996 funding levels assume significant contractor reductions in the FY 1995/FY 1996 timeframe. These reductions, where possible, will be completed during FY 1995 in order to achieve the savings necessary ($400 million) to remain within the FY 1996 budget and outyear targets (see Exhibit 4).

In addition, up to $200 million of savings derived from contractor workforce reductions will be utilized to minimize the impacts on displaced workers by addressing: separation incentives, retraining, preference in hiring at other DOE facilities, and relocation assistance.

Productivity Savings

The EM program has implemented an aggressive management initiative to reduce the cost of doing business. In addition to contractor reduction savings, a combination of project management cost savings, efficiency gains through increased Federal personnel in the field, reduced overhead/indirect costs, and decreases in the use of support service contracts, should save EM approximately $604 million in FY 1996. These projected savings have been factored into the FY 1996 budget request (see Exhibit 4).

New Missions

Beginning with the execution of the FY 1996 budget, EM will be totally responsible for the management of the Savannah River Site in South Carolina, the Mound Plant in Ohio, and the Pinellas Plant in Florida. Facilities at other sites (Albuquerque, Chicago, Richland, and Rocky Flats) are included in the budget to provide safe stewardship and support transition activities. The FY 1996 request includes $826 million for these new EM activities which were previously managed and budgeted for by Defense Programs and other Departmental elements (see Exhibits 5 and 6).

EM Internal Restructuring

The FY 1996 request reflects a number of target transfers internal to EM, primarily the shifting of non-Research and Development activities out of the Technology Development program and establishing the Office of Compliance and Program Coordination (see Exhibits 5 and 6).

1990

The FY 1996 budget request under the Defense Environmental Restoration and Waste Management Appropriation includes the following eight program activities: Corrective Activities, Environmental Restoration, Waste Management, Technology Development, Transportation Management, Nuclear Materials and Facilities Stabilization, Compliance and Program Coordination, and Analysis, Education and Risk Management.

- Corrective Activities are programs designed to bring active and standby facilities into compliance with applicable local, State and Federal regulations. The major regulatory drivers are the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act, and the Toxic Substances Control Act (TSCA). Of the 170 defense-related projects originally identified in 1989, the program has successfully completed all but one of them. In FY 1996, funding is required to continue this one project, the Hazardous Waste Treatment Facility at the Los Alamos National Laboratory in New Mexico.

- Environmental Restoration program activities include assessment, characterization, and remediation efforts at a large number of surplus facilities and inactive sites across the country. The objectives of the Environmental Restoration program, which are discussed in the Facilities and Sites activity, are to stabilize radioactive waste or perform decontamination and decommissioning (D&D) at contaminated DOE and legislatively-authorized non-government facilities and sites; to conduct assessments and characterization of DOE sites to determine if there is the potential for radioactive and hazardous waste releases; and to reduce and remove the potential risks to the environment and to human health and safety resulting from past Defense-related Departmental activities. Also included are the headquarters and operations/field office program direction expenses for Federal management of all Environmental Restoration program efforts. The FY 1996 request focuses on essential activities which 1) reduce and remove the potential risks to the environment and human health and safety; and, 2) comply with the various agreements and other legal requirements. In addition, a prudent amount of funding has been included for D&D activities to address the backlog of facilities requiring remediation. Performing additional D&D will reduce the need for future surveillance and maintenance expenses, reduce potential worker health and safety incidences, and contribute to the overall DOE site cleanup required by the numerous compliance agreements.

- Waste Management program activities are focused on safely, effectively, and efficiently managing the minimization, characterization, transportation, treatment, storage, and disposal of radioactive, hazardous, mixed, and sanitary wastes generated by past and ongoing operations at DOE facilities. These fundamental functions are necessary to safely and effectively manage waste which has resulted from the Department's major nuclear programs conducted by the Office of Defense Programs, and to prepare for new waste resulting from Environmental Restoration activities. These activities have been carried out in a large industrial complex located at manufacturing, processing, testing, and research and development installations across the country for the last four decades. The production and cleanup operations routinely generate various amounts and types of radioactive, hazardous, mixed waste products, and sanitary waste which require treatment, storage or disposal. Other activities performed by the Waste Management program are the operation and management of RCRA and TSCA permitted facilities to meet program and regulatory requirements, the Defense Waste Processing Facility, the Waste Isolation Pilot Plant program, the policy guidance and coordination of the DOE Waste Minimization Program, and program direction expenses associated with headquarters and operations/field office Federal management of Waste Management and Corrective Activities program activities. In FY 1996, the Waste Management program will focus on two specific goals: (1) to eliminate the urgent risk in Waste Management activities; and (2) to demonstrate tangible results to the American people. In meeting the first goal, the Department plans to start up the Defense Waste Processing Facility at the Savannah River Site in South Carolina. This $2 billion, first-of-a-kind facility will solidify liquid high-level radioactive waste and provide safer storage until ultimate disposal. Also, the most urgent safety issues at the high-level waste tanks in Hanford, Washington, will be resolved in FY 1996 through introduction of various

technical means such as pumps, improved ventilation, and sluicing. Finally, the FY 1996 request includes funding for some of the expected activities that will be required as a result of the Federal Facilities Compliance Act of 1992. This legislation will have far-reaching implications for the Department of Energy since it waives sovereign immunity for Federal Agencies from fines and penalties for land disposal storage violations. While the Act allows a three-year delay until the imposition of fines and penalties for certain violations related to DOE's storage of mixed waste, it does require the Department to develop site-specific plans for developing capacity to treat its mixed waste that will be approved and enforced by the States or the United States Environmental Protection Agency. By FY 1996, Individual Site Treatment Plans will have been submitted to the States. Compliance Agreements, where needed, will also be ready for implementation.

- Technology Development is a comprehensive applied research, development, demonstration, testing, and evaluation initiative to support environmental management activities through new technologies that increase overall efficiency and effectiveness while significantly reducing future costs. The objective of the program is to develop high-payoff technologies that can be applied to clean up the inventory of DOE nuclear component manufacturing sites and manage DOE-generated waste faster, safer, and cheaper than current environmental cleanup technologies. In cooperation with other DOE research organizations, EM will use the best science and technology available to solve these challenging environmental problems. The FY 1996 request is based on a new approach to managing DOE's environmental research and technology development activities. The key features of the new approach are: teaming with the customers in EM to identify, develop, and implement needed technology; focusing technology development activities on major environmental management problems; ensuring coordinated management of all scientific and development activities in support of EM; focusing all available resources in National Laboratories more effectively; involving industry in developing and implementing solutions including both technology transfer into the Department and technology transfer from DOE to the private sector; strengthening the basic research role by involving academia and other research organizations to stimulate technological breakthroughs associated with the focus areas; enhancing mechanisms for regulator and stakeholder involvement; and enhancing mechanisms for implementing technology development results. Within the broad and diverse EM Technology Development program, four technical areas provide support across all the EM programs. They are Treatment and Remediation Technology Systems, Innovative and Crosscutting Program, Technology Integration, and Industry Programs. Also included are program support/direction expenses associated with headquarters and operations/field office Federal management of Technology Development program activities. Beginning in FY 1996, any non-technology development activities will no longer be funded under this program. Exhibit 5 displays the activities and associated funding which shift to other EM programs. Exhibit 6 shows the comparison of the FY 1995 Comparable budget to the FY 1996 Congressional Request.

- Transportation Management develops and implements effective strategies, techniques, methods, and policy guidance for safe, secure, efficient, and economical transportation of DOE materials, including hazardous materials (particularly radioactive), hazardous substances, and hazardous and mixed wastes. The Transportation Management program oversees the policy, direction, audit, and appraisal of the transportation operations, traffic management, and packaging operations programs, and provides institutional support and public information on transportation issues and topics. The program assures the uninterrupted flow of goods and materials to achieve production, waste management, and environmental restoration goals and objectives; and is responsible for coordination of DOE-wide transportation research, development, testing, evaluation programs, and supporting package certification and regulatory policy development. In FY 1996, the Transportation Management program will focus on coordinating packaging activities throughout the Department to ensure that they are performed in a safe and regulatory-compliant manner, affirm that stakeholder concerns are addressed, and implement cost savings initiatives.

- Nuclear Materials and Facilities Stabilization (formerly entitled Facility Transition and Management) coordinates and oversees the orderly transfer of surplus contaminated installations, facilities, and materials to EM. This program plays a significant role in developing and implementing the policy and procedures for acceptance and disposition of these facilities. This program focuses on deactivation activities in a cost-effective and environmentally-sound manner to substantially decrease outyear surveillance and maintenance mortgages associated with currently contaminated facilities. These efforts are being accomplished while placing high priority on minimizing economic impacts to local communities. In addition, this program continues to be the focal point for landlord and infrastructure demands at EM's three major program sites: Idaho, Richland, and Rocky Flats. In FY 1996, the Nuclear Materials and Facilities Stabilization program reflects a notable increase primarily due to the transfer of the Savannah River Site from the Office of Defense Programs (DP) including C, K, L, P, and R Reactors; D-Area; F and H Canyons; and landlord obligations. This request also incorporates the DP transfer of the Mound and Pinellas Plants, as well as several Departmental facilities at other sites. Program direction expenses associated with Headquarters and Operations/Field Office Federal management of Nuclear Materials and Facilities Stabilization activities are included in this program.

- Compliance and Program Coordination provides independent monitoring and appraisal, integrated and independent performance analysis, and technical assistance for EM activities in the areas of environment, safety and health; engineering and cost evaluation; technical operations, emergency management, analytical services, quality assurance, Federal Managers' Financial Integrity Act compliance, and self-evaluation. Also included are program direction expenses associated with headquarters and operations/field office Federal management of Compliance and Program Coordination and Transportation Management program activities. In FY 1996, this program will focus on providing a safe workplace by completing safety and health plans and Safety Analysis Reports or Preliminary Hazards Analysis at all major facilities, and developing standards/requirement identification documents for all major EM facilities.

  Compliance and Program Coordination is a new program in FY 1996. It inherited many of the non-technology development activities previously included in the Technology Development program. Exhibits 5 and 6 display the various activities which have transferred to this program.

- Analysis, Education, and Risk Management (formerly entitled Program Direction) provides Federal staffing resources and associated funding to plan, direct, and manage the EM program and provides for crosscutting activities, such as educational development, which support the overall EM mission. Funding for the Office of Integrated Risk Management and the Office of Public Accountability is also included.

This budget does not reflect FY 1997 funding levels for national security programs. The requirement to submit a two-year budget will be met through the Department's submission of the National Security Programs Five-Year Budget Plan. The Five-Year Plan is currently being developed by the Department and should be submitted to Congress in the near future.

The individual budget submissions provide detailed information for each of the program areas and identify the various sites where EM is conducting its activities. The level of workscope described in the eight EM budget submissions totals $7,326 million in FY 1996. In the Defense Environmental Restoration and Waste Management appropriation, EM is requesting $6,322 million, after an adjustment of $1,004 million for productivity and contractor reduction savings. This request is then offset by the use of prior year balances of $277 million and a $37 million pension refund for a net budget authority request of $6,008 million. This request is illustrated on Exhibit 4. Approximately 25 percent of the FY 1996 request is needed to perform remediation activities, 40 percent for waste management/corrective activities, 6 percent for technology development efforts, 25 percent for nuclear material and facilities stabilization functions, and 4 percent for other needed crosscutting activities.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

LEAD TABLE

Environmental Management

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Corrective Activities					
Operating Expenses	$2,170	$0	$0	$0	$0
Capital Equipment	600	0	0	0	0
Construction	4,432	512	0	512	3,406
Subtotal	7,202	512	0	512	3,406
Environmental Restoration					
Operating Expenses	1,454,447	1,518,549	(138,625)	1,379,924	1,575,973
Capital Equipment	0	0	0	0	0
Construction	0	0	0	0	0
Subtotal	1,454,447	1,518,549	(138,625)	1,379,924	1,575,973
Productivity Savings	---	(133,900)	133,900	0	---
Subtotal	1,454,447	1,384,649	(4,725)	1,379,924	1,575,973
Waste Management					
Operating Expenses	2,335,985	2,384,066	(128,440)	2,255,626	2,196,766
Capital Equipment	112,911	90,790	(1,030)	89,760	91,500
Construction	314,728	367,916	(40,255)	327,661	213,330
Subtotal	2,763,624	2,842,772	(169,725)	2,673,047	2,501,596
Productivity Savings	---	(160,800)	160,800	0	---
Subtotal	2,763,624	2,681,972	(8,925)	2,673,047	2,501,596
Technology Development					
Operating Expenses	365,272	386,974	(750)	386,224	367,587
Capital Equipment	28,525	24,785	(650)	24,135	22,923
Construction	0	7,000	0	7,000	0
Subtotal	393,797	418,759	(1,400)	417,359	390,510

1994

Exhibit 1

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

LEAD TABLE

Environmental Management

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Transportation Management					
Operating Expenses	19,243	20,240	0	20,240	15,918
Capital Equipment	300	444	0	444	240
Construction	0	0	0	0	0
Subtotal	19,543	20,684	0	20,684	16,158
Nuclear Materials and Facilities Stabilizations/					
Operating Expenses	$517,045	$676,884	($6,827)	$670,057	$1,413,987
Capital Equipment	20,213	18,947	0	18,947	53,397
Construction	73,086	77,136	(623)	76,513	128,644
Subtotal	610,344	772,967	(7,450)	765,517	1,596,028
Productivity Savings	---	(5,000)	5,000	0	---
Subtotal	610,344	767,967	(2,450)	765,517	1,596,028
Compliance and Program Coordination					
Operating Expenses	0	0	0	0	65,551
Capital Equipment	0	0	0	0	700
Construction	0	0	0	0	15,000
Subtotal	0	0	0	0	81,251
Analysis, Education and Risk Management b/					
Operating Expenses	82,427	83,748	0	$83,748	155,616
Capital Equipment	9,469	1,200	0	1,200	1,406
Construction	0	0	0	0	0
Subtotal	91,896	84,948	0	84,948	157,022

a/ Formerly entitled "Facility Transition and Management"
b/ Formerly entitled "Program Direction"

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

LEAD TABLE

Environmental Management

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Totals					
Operating Expenses	$4,776,589	$5,070,461	($274,642)	$4,795,819	$5,791,398
Capital Equipment	172,018	136,166	(1,680)	134,486	170,166
Construction	392,246	452,564	(40,878)	411,686	360,380
Subtotal	$5,340,853	$5,659,191	($317,200)	$5,341,991	$6,321,944
Productivity Savings	---	(299,700)	299,700	0	---
Subtotal	$5,340,853	$5,359,491	($17,500)	$5,341,991	$6,321,944
Use of Prior Year Balances (Offset)	(170,788)	(249,300)	0	(249,300)	(276,942)
Savannah River Pension Refund (Offset)	0	0	0	0	(37,000)
Procurement Reform	0	(17,500)	17,500	0	0
TOTAL, EM	$5,170,065	$5,092,691	$0	$5,092,691	$6,008,002
FTEs					
Headquarters	633	858	0	858	834
Field Offices	1,434	2,242	0	2,242	3,082
Total FTEs	2,067	3,100	0	3,100	3,916

Exhibit 2

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

SUMMARY OF CHANGES

FY 1995 Appropriation	$5,092,691
Adjustment	0
FY 1995 Adjusted	$5,092,691
Inter-Departmental Transfers (Target Adjustments)	
- Savannah River Site, South Carolina (transfer of management responsibility from Defense Programs)	+684,918
- Mound Plant in Ohio (transfer of management responsibility from Defense Programs)	+57,154
- Pinellas Plant in Florida (transfer of management responsibility from Defense Programs)	+48,908
- Additional facilities at Albuquerque, Chicago, Richland, and Rocky Flats for transition activities and safe stewardship	+35,318
Adjusted FY 1996 Baseline	$5,918,989
- Provide full Government contribution to the Uranium Enrichment Decontamination and Decommissioning Fund	+216,300
- Other Net program requirements (changes are described in the eight EM program budgets)	+186,655*
FY 1996 Congressional Budget Request (Defense)	$6,321,944*
Use of Prior Year Balances (Offset)	-276,942
Savannah River Pension Refund (Offset)	-37,000
FY 1996 New Budget Authority Required	$6,008,002*

*Management initiatives to achieve productivity savings of $604 million and contractor reduction savings of $400 million in FY 1996 are reflected in these amounts.

1997

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

ENVIRONMENTAL MANAGEMENT

FEDERAL STAFFING
FULL-TIME EQUIVALENTS (FTEs) SUMMARY

	FY 1994 Actual	FY 1995 Ceiling	FY 1996 Request	Increase/ Decrease
Albuquerque	135	251	256	+5
Chicago	29	64	67	+3
Idaho	267	275	276	+1
Morgantown Energy Technology Center	10	14	14	---
Nevada	37	65	67	+2
Oakland	48	87	90	+3
Ohio	77	206	246	+40
Oak Ridge	105	181	188	+7
Pittsburgh Energy Technology Center	---	2	2	---
Rocky Flats	191	298	302	+4
Richland	433	573	573	---
Savannah River	102	226	601	+375
Pilot Program	---	---	400	+400
Subtotal, Field	1,434	2,242	3,082	+840
Headquarters	633	858	834	- 24
Total, FTEs	2,067	3,100	3,916	+816

1998

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

Exhibit 4

Environmental Management

Program	Requirements (Work Scope)	Efficiency Offsets: Productiv. Savings	Efficiency Offsets: Contractor Reductions	FY 1996 Request: $	FY 1996 Request: Percentage
Corrective Activities	$3,406	—	—	$3,406	0.1%
Waste Management	2,986,669	(289,109)	(195,964)	2,501,596	39.6%
Environmental Restoration	1,531,165	(216,605)	(88,587)	1,225,973	19.4%
Gov't Contribution to the Uranium Enrichment Decontamination and Decommissioning Fund	350,000	—	—	350,000	5.5%
Technology Development	390,510	—	—	390,510	6.2%
Transportation Management	17,965	—	(1,807)	16,158	0.3%
Nuclear Materials and Facilities Stabilization	1,800,490	(91,963)	(112,499)	1,596,028	25.2%
Analysis, Education and Risk Management	163,737	(6,715)	—	157,022	2.5%
Compliance & Program Coordination	82,396	—	(1,145)	81,251	1.3%
Subtotal	$7,326,338	($604,392)	($400,002)	$6,321,944	
Use of Prior Year Balances (Offset)				(276,942)	
SR Pension Refund (Offset)				(37,000)	
FY 1996 Congressional Request				$6,008,002	

1999

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

Exhibit 5

ADJUSTMENTS/COMPARABILITY TABLE
Environmental Management

	Corrective Activities	Waste Management	Environ. Restoration	Technology Development	Transport. Management	Nucl Material & Facilities Stabilization	Analysis Educ & Risk Management	Compliance & Program Coordination	TOTAL
FY 1995 Adjusted	$512	$2,673,047	$1,379,924 a/	$417,359	$20,684	$765,517	$84,948	—	$5,341,991
EM Restructuring									
Analytical Laboratory	—	—	—	(16,201)	—	—	—	16,201	—
Emergency Management	—	—	—	(2,962)	—	—	—	2,962	—
Hazardous Materials Training Progra	—	—	—	(13,000)	—	—	—	13,000	—
Liaison & Communication	—	—	—	(700)	700	—	—	—	—
Education Development	—	—	—	(14,852)	—	—	14,852	—	—
Decision Support/				(6,400)					
Risk Management	—	—	—	(17,500)	—	—	23,900	—	—
Indian Grants	—	—	—	—	—	(1,956)	1,956	—	—
Radiological Environmental Services									
Laboratory (32 FTEs)	—	—	—	—	—	(4,782)	—	4,782	—
90-D-126, Sewage Treatment Plant,									
Rocky Flats	—	(230)	—	—	—	230	—	—	—
Colorado Agreement-in-Principle	—	(2,845)	—	—	—	2,845	—	—	—
Program Direction	—	—	—	(3,366)	—	—	(5,881)	9,247	—
Program Support	—	—	—	(5,900)	—	—	(18,138)	24,038	—
Subtotal	512	2,669,972	1,379,924	336,478	21,384	761,854	101,637	70,230	5,341,991
New Scope									
Savannah River Site	—	—	—	—	—	684,918	—	—	684,918
Mound Plant	—	—	—	—	—	57,154	—	—	57,154
Pinellas Plant	—	—	—	—	—	48,908	—	—	48,908
Other Sites	—	—	—	—	—	35,318	—	—	35,318
FY 1995 Adjusted	$512	$2,669,972	$1,379,924	$336,478	$21,384	$1,588,152	$101,637	$70,230	$6,168,289
Use of Prior Year Balances (Offset)									(249,300)
FY 1995 Total									$5,918,989

a/ Includes Government Contribution to the Uranium Enrichment D&D fund of $133,700.

2000

Exhibit 6

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

"COMPARABILITY" REQUEST

Environmental Management

Program	FY 1995 Adjusted	FY 1995 Comparable	FY 1996 Request	Increase/ Decrease	Percentage
Corrective Activities	$512	$512	$3,406	$2,894	565%
Waste Management	2,673,047	2,669,972	2,501,596	(168,376)	-6%
Environmental Restoration	1,246,224	1,246,224	1,225,973	(20,251)	-2%
Gov't Contribution to the Uranium Enrichment Decontamination and Decommissioning Fund	133,700	133,700	350,000	216,300	162%
Technology Development	417,359	336,478	390,510	54,032	16%
Transportation Management	20,684	21,384	16,158	(5,226)	-24%
Nuclear Materials and Facilities Stabilization	765,517	1,588,152	1,596,028	7,876	1%
Analysis, Education and Risk Management	84,948	101,637	157,022	55,385	54%
Compliance & Program Coordination	0	70,230	81,251	11,021	16%
Subtotal	5,341,991	6,168,289	6,321,944	153,655	2%
Use of Prior Year Balances (Offset)	(249,300)	(249,300)	(276,942)	(27,642)	
SR Pension Refund (Offset)	0	0	(37,000)	(37,000)	
Total	$5,092,691	$5,918,989	$6,008,002	$89,013	2%

FY 1995 Adjusted
- Reflects EM Internal Realignment which primarily shifts non-research and development activities out of the Technology Development program and establishes the Compliance and Program Coordination program (see Exhibit 5).
- Includes target transfers totaling $826,298 within DOE (Savannah River, Mound, Pinellas, and other sites) as shown on Exhibit 5.

2001

OVERVIEW

CORRECTIVE ACTIVITIES (DEFENSE)

This program brings active and standby facilities at DOE defense sites into compliance with all applicable air, water, and solid waste regulatory requirements, negotiated agreements, and other regulatory requirements. The baseline of non-compliant facilities, established in 1989, consists of about 170 distinct projects, most of which are located at defense related facilities. The primary regulations governing these activities are the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, Safe Drinking Water Act, Toxic Substances Control Act, and State and local ordinances. Once the facility is brought into compliance, the corrective activity is complete, and the funding responsibility for maintaining compliance shifts to the Office of Environmental Management or the Office of Defense Programs base program that "owns" the facility.

2002

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Corrective Activities (Defense)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Solid Waste Regulations					
Operating Expenses	$ 951	$ 0	$ 0	$ 0	$ 0
Construction	3,888	512	0	512	3,406
Subtotal, Solid Waste Regulations	$ 4,839	$ 512	$ 0	$ 512	$ 3,406
Water Regulations					
Operating Expenses	$ 1,219	$ 0	$ 0	$ 0	$ 0
Capital Equipment	600	0	0	0	0
Construction	544	0	0	0	0
Subtotal, Water Regulations	$ 2,363	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 7,202	$ 512	$ 0	$ 512	$ 3,406
Summary					
Operating Expenses	$ 2,170	$ 0	$ 0	$ 0	$ 0
Capital Equipment	600	0	0	0	0
Construction	4,432	512	0	512	3,406
Total Program	$ 7,202	$ 512	$ 0	$ 512	$ 3,406
Staffing (FTEs)	0	0	0	0	0

2003

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Corrective Activities (Defense)

FY 1995 Appropriation	$ 512
· Adjustment ·	0
FY 1995 Adjusted	$ 512
· Transfer ·	0
FY 1995 Comparable	$ 512
Solid Waste Regulations	
· Solid Waste Regulations · Begins physical construction and long-lead procurements of the Hazardous Waste Treatment Facility at Los Alamos National Laboratory	+2,894
FY 1996 CONGRESSIONAL Budget Request	$ 3,406

2004

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Corrective Activities (Defense)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Los Alamos National Laboratory	$ 2,000	$ 0	$ 0	$ 0	$ 3,406
OAK RIDGE OPERATIONS OFFICE					
Y-12 Plant	$ 600	$ 0	$ 0	$ 0	$ 0
OAKLAND OPERATIONS OFFICE					
Lawrence Livermore National Lab	$ 4,058	$ 512	$ 0	$ 512	$ 0
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Site	$ 544	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 7,202	$ 512	$ 0	$ 512	$ 3,406

2005

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CORRECTIVE ACTIVITIES (DEFENSE)

I. Preface: Solid Waste Regulations

Funds provided under this budget category address corrective activities necessary to bring out-of-compliance defense facilities into compliance with RCRA, TSCA, provisions of the Hazardous and Solid Waste Amendments, State and local ordinances, and DOE Orders. The FY 1996 funding begins physical construction of the Hazardous Waste Treatment Facility at Los Alamos National Laboratory.

II. A. Summary Table: Solid Waste Regulations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Solid Waste Regulations	$ 4,839	$ 512	$ 3,406	$ 2,894
Total, Solid Waste Regulations	$ 4,839	$ 512	$ 3,406	$ 2,894

II. B. Laboratory and Facility Funding Table: Solid Waste Regulations

Lawrence Livermore National Lab	$ 4,058	$ 512	$ 0	$ -512
Los Alamos National Laboratory	781	0	3,406	3,406
Total, Solid Waste Regulations	$ 4,839	$ 512	$ 3,406	$ 2,894

2006

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Solid Waste Regulations	**ALBUQUERQUE**		
	Continued construction of Kansas City Plant flood protection system using prior year funds. ($0)	Will complete construction of flood protection system using prior year funds. ($0)	No activity. ($0)
	Continued work on environmental assessment and began Title II design of Hazardous Waste Treatment facility (HWTF) (Project 90-D-103) at Los Alamos National Laboratory (LANL) using prior year funds. This project is necessary for treatment operations for compliance with Resource Conservation and Recovery Act (RCRA) and the federal Facility Compliance Act (FFCAct). Commenced construction of Industrial Waste System for wastewater conveyance to treatment facility. Continued work on environmental assessment and began Title II design of Hazardous Waste Treatment Facility (HWTF) (Project 90-D-103) at Los Alamos National Laboratory (LANL) using prior year funds. Treated approximately 50 PCB contaminated transformers using prior year funds. ($781)	Complete HWTF environmental assessment and Title II design using prior year funds. Industrial Waste System at LANL will be completed and closed out. Treat remaining 7 PCB transformers. ($0)	Begin equipment procurement and construction activities for HWTF to consolidate existing hazardous waste treatment processes and add treatment processes that currently do not exist at LANL in response to RCRA and Toxic Substances Control Act (TSCA) waste management requirements. Failure to meet design and construction milestones in the FFCAct can result in fines to DOE. There is $3,406,000 capital construction associated with this project, 90-D-103, shown at the end of the Solid Waste Regulations budget narrative. ($0)
	OAKLAND		
	Supported Sanitary Sewer Rehabilitation construction and Tank Upgrades project at Livermore. There was $3,888,000 approriated for the Tank Upgrades project, 92-D-402, as shown below. ($170)	No activity. ($0)	No activity. ($0)

2007

III. Solid Waste Regulations (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Solid Waste Regulations (Cont'd)	CONSTRUCTION The Solid Waste budget provided for construction to support the activities described above. ($3,888)	CONSTRUCTION The Solid Waste budget provides for construction to support the activities described above. ($512)	CONSTRUCTION The Solid Waste budget provides for construction to support the activities described above. ($3,406)
	$4,839	$512	$3,406
Solid Waste Regulations	$4,839	$512	$3,406

2008

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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

CORRECTIVE ACTIVITIES (DEFENSE)

I. Preface: Water Regulations

This budget category reflects funding for corrective activities needed to bring active and standby facilities at defense DOE sites into compliance with the Clean Water Act, Safe Drinking Water Act, State and local ordinances, and DOE Order requirements. In FY 1996, there are no activities requiring funding.

II. A. Summary Table: Water Regulations

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Water Regulations	$ 2,363	$ 0	$ 0	$ 0
Total, Water Regulations	$ 2,363	$ 0	$ 0	$ 0

II. B. Laboratory and Facility Funding Table: Water Regulations

Savannah River Site	544	0	0	0
Los Alamos National Laboratory	1,219	0	0	0
Y-12 Plant	600	0	0	0
Total, Water Regulations	$ 2,363	$ 0	$ 0	$ 0

2009

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Water Regulations	ALBUQUERQUE		
	Completed RCRA testing and data analysis of active firing sites at LANL. Completed RCRA testing and data analysis of active firing sites at LANL. Closed out LANL Sanitary Wastewater Consolidation project. ($1,219)	Complete construction and/or design of four minor Sanitary Wastewater treatment enhancement and conveyance projects at LANL with carryover funds. ($0)	No activity. ($0)
	OAK RIDGE		
	Continued to procure and install ozonation units and associated equipment on the final group of cooling towers at Y-12. There was $600,000 appropriated for the capital equipment. ($0)	No activity. ($0)	No activity. ($0)
	SAVANNAH RIVER		
	Closed out K-Reactor Cooling Tower Thermal Mitigation project. ($0)	No activity. ($0)	No activity. ($0)
	CAPITAL EQUIPMENT	CAPITAL EQUIPMENT	CAPITAL EQUIPMENT
	The Water Regulations budget provides for capital equipment purchases to support the activities described above. ($600)	No activity. ($0)	No activity. ($0)
	CONSTRUCTION	CONSTRUCTION	CONSTRUCTION
	Closed out K-Reactor Cooling Tower Thermal Mitigation project, 89-D-142. ($544)	No activity. ($0)	No activity. ($0)
	$2,363	$0	$0
Water Regulations	$2,363	$0	$0

2010

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OFFICE OF WASTE MANAGEMENT
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IV. A. Project Summary Listing

Corrective Activities - Defense

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
92-D-403	Tank Upgrades Project, LLNL	$ 13,600	$ 3,888	$ 512	$ 0	$ 500	$ 18,500
90-D-103	ES&H Improvements, Weapons Research and Development Complex, LANL	9,079	0	0	3,406	1,641	14,126
89-D-142	Reactor Effluent Cooling Water Thermal Mitigation, SR	83,000	544 a/	0	0	0	83,544
Subtotal, Construction Funded		$105,679	$ 4,432	$ 512	$ 3,406	$ 2,141	N/A
TOTAL, Corrective Activities - Defense		$105,679	$ 4,432	$ 512	$ 3,406	$ 2,141	N/A
TOTAL NUMBER OF LINE ITEMS		(3)	(2)	(1)	(1)	(2)	

a/ FY1994 approved internal reprogramming.

2011

1. Title and Location of Project:	ES&H Improvements, Weapons Research and Development Complex, Los Alamos National Laboratory, Los Alamos, New Mexico	2a. Project No.: 90-D-103 2b. Construction Funded

SIGNIFICANT CHANGES

- Subproject #01. Industrial Waste System and #02. Hazardous Waste Treatment Facility are delineated separately.
- The TPC has been increased and the schedule slipped due to a redesign of the facility in order to comply with RCRA (40 CFR 264) T/S/D and DOE non-reactor nuclear facility requirements, additional NESHAPS, and Environmental Requirements.
- The TEC increased from $11,501,000 at previous Congressional submission to $14,126,000.
- The TPC increased from $11,601,000 at previous Congressional submission to $15,510,000 due to additional other project costs such as increase in cost of design criteria.

2012

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-103, ES&W Improvements, a/ Weapons Research and Development Complex, Los Alamos National Laboratory, Los Alamos, New Mexico — TEC: $14,126 b/ TPC: $15,510

Start Date: 1st Qtr. FY 1991, IWS; 4th Qtr. FY 1991, HWTF — Completion Date: 1st Qtr. FY 1995, IWS; 4th Qtr. FY 1997 HWTF

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1990	$ 1,971		$ 0	$ 0
1991	4,200		0	100
1992	0		534	210
1993	6,314		1,696	310
1994	0	- 3,406 c/	121	101
1995	0	- 95 d/	650	905
1996	3,406		5,123	5,000
1997	1,641		4,296	5,000
1998	95		1,706	2,500

a/ This funding is for two subprojects (Hazardous Waste Treatment Facility, LANL and Industrial Waste System, LANL, Los Alamos, New Mexico) under line item originally appropriated to Weapons R&D Program.
b/ TEC increase of $570,000 is due to an unexpected Solid Waste Management Unit (SWMU) determination and characterization for Subproject #02.
c/ Use of prior year funds for FY 1994 uncosted offset.
d/ Use of prior year funds for FY 1995 uncosted offset.

3. Narrative:

This project consists of the following two subprojects:

Subproject #01 - Industrial Waste System, LANL

~~This subproject will~~ Replace existing piping system ~~the Industrial Waste System~~ with four double-walled pipes; two double-walled ~~pipes will be~~ polypropylene pipes and two ~~will be~~ polyvinylidene-di-fluoride (PVDF) pipes. Three of the pipes will actively transport process waste, and the fourth line will act as a spare. The replacement collection system will require the modification of the monitoring sump at ~~TA-63~~ TA-50 to accommodate the new pipes and instrumentation. The estimated annual waste volumes to be transported through these new lines are 36,000 liters, 158,000 liters, and 5,000,000 liters of caustic, acid, and industrial wastes, respectively.

This subproject will be completed and closed out in FY 1995.

Subproject #02 - Hazardous Waste Treatment Facility, LANL

This subproject will provide for the design and construction of a new Hazardous Waste Treatment Facility (HWTF) to consolidate existing hazardous waste treatment processes at ~~TA-50~~ TA-63 and to add treatment processes that currently do not exist at the Los Alamos National Laboratory. The HWTF project consists of three buildings, the Treatment Building, the Office Building, and a covered receiving/storage building of approximately 6,220 square feet. The waste treatment building will be a structure of approximately 12,000 square feet with four separate treatment areas. The four treatment areas will have spill containment trenches and other containment details to prevent the inadvertent release of contaminants due to spills or accidents. The treatment building will also contain change rooms, an analytical

2013

chemistry laboratory, a small maintenance shop, and associated support space. The receiving and storage building will provide a loading dock for the facility and storage area for unprocessed and processed wastes.

The FY ~~1994~~ 1996 funding will continue construction.

2014

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IV. A. Project Summary Listing

Corrective Activities - Defense

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
92-D-403	Tank Upgrades Project, LLNL	$ 13,600	$ 3,888	$ 512	$ 0	$ 500	$ 18,500
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TOTAL, Corrective Activities - Defense		$105,679	$ 4,432	$ 512	$ 3,406	$ 2,141	N/A
TOTAL NUMBER OF LINE ITEMS		(3)	(2)	(1)	(1)	(2)	

a/ FY1994 approved internal reprogramming.

2015

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(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	ES&H Improvements, Weapons Research and Development Complex, Los Alamos National Laboratory, Los Alamos, New Mexico	2a. Project No.: 90-D-103 2b. Construction Funded

SIGNIFICANT CHANGES

- Subproject #01. Industrial Waste System and #02. Hazardous Waste Treatment Facility are delineated separately.
- The TPC has been increased and the schedule slipped due to a redesign of the facility in order to comply with RCRA (40 CFR 264) T/S/D and DOE non-reactor nuclear facility requirements, additional NESHAPS, and Environmental Requirements.
- The TEC increased from $11,501,000 at previous Congressional submission to $14,126,000.
- The TPC increased from $11,601,000 at previous Congressional submission to $15,510,000 due to additional other project costs such as increase in cost of design criteria.

2016

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-103, ES&H Improvements, a/ Weapons Research and Development Complex, Los Alamos National Laboratory, Los Alamos, New Mexico

TEC: $14,126 b/
TPC: $15,510

Start Date: 1st Qtr. FY 1991, IWS
4th Qtr. FY 1991, HWTF

Completion Date: 1st Qtr. FY 1995, IWS
4th Qtr. FY 1997 HWTF

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1990	$ 1,971		$ 0	$ 0
1991	4,200		0	100
1992	0		534	210
1993	6,314		1,696	310
1994	0	- 3,406 c/	121	101
1995	0	- 95 d/	650	905
1996	3,406		5,123	5,000
1997	1,641		4,296	5,000
1998	95		1,706	2,500

a/ This funding is for two subprojects (Hazardous Waste Treatment Facility, LANL and Industrial Waste System, LANL, Los Alamos, New Mexico) under line item originally appropriated to Weapons R&D Program.
b/ TEC increase of $570,000 is due to an unexpected Solid Waste Management Unit (SWMU) determination and characterization for Subproject #02.
c/ Use of prior year funds for FY 1994 uncosted.
d/ Use of prior year funds for FY 1995 uncosted.

3. Narrative:

This project consists of the following two subprojects:

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~~This subproject will~~ Replace existing piping system ~~the Industrial Waste System~~ with four double-walled pipes; two double-walled ~~pipes will be~~ polypropylene pipes and two ~~will be~~ polyvinylidene-di-fluoride (PVDF) pipes. Three of the pipes will actively transport process waste, and the fourth line will act as a spare. The replacement collection system will require the modification of the monitoring sump at ~~TA-63~~ TA-50 to accommodate the new pipes and instrumentation. The estimated annual waste volumes to be transported through these new lines are 36,000 liters, 158,000 liters, and 5,000,000 liters of caustic, acid, and industrial wastes, respectively.

This subproject will be completed and closed out in FY 1995.

Subproject #02 - Hazardous Waste Treatment Facility, LANL

This subproject will provide for the design and construction of a new Hazardous Waste Treatment Facility (HWTF) to consolidate existing hazardous waste treatment processes at ~~TA-50~~ TA-63 and to add treatment processes that currently do not exist at the Los Alamos National Laboratory. The HWTF project consists of three buildings, the Treatment Building, the Office Building, and a covered receiving/storage building of approximately 6,220 square feet. The waste treatment building will be a structure of approximately 12,000 square feet with four separate treatment areas. The four treatment areas will have spill containment trenches and other containment details to prevent the inadvertent release of contaminants due to spills or accidents. The treatment building will also contain change rooms, an analytical

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chemistry laboratory, a small maintenance shop, and associated support space. The receiving and storage building will provide a loading dock for the facility and storage area for unprocessed and processed wastes.

The FY ~~1994~~ 1996 funding will continue construction.

2018

DEPARTMENT OF ENERGY
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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

OVERVIEW

ENVIRONMENTAL RESTORATION

I. INTRODUCTION

The mission of the Environmental Restoration program is to reduce or eliminate risks to human health and the environment through assessment, remediation, and decontamination and decommissioning (D&D) of contaminated Department of Energy (DOE) sites. These sites include contaminated surface water, groundwater, soil and structures totalling over 3,300 square miles. Various amounts and types of waste have accumulated at these sites as a result of past Departmental nuclear weapons production and research activities spanning nearly five decades. The Department is committed to executing an Environmental Restoration program which 1) protects public health and safety; 2) assures a safe and clean environment; and 3) maintains compliance with the letter and spirit of applicable Federal, State, and local health, safety, and environmental statutes.

Remedial action requirements are derived primarily from the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and the Resource Conservation and Recovery Act (RCRA) of 1976, as amended. Remedial action projects require compliance with the National Environmental Policy Act (NEPA) consistent with DOE policy on CERCLA/NEPA integration. Cleanup and reporting requirements for remediating hazardous waste sites are imposed by CERCLA. Under this act, the Department conducts Remedial Investigations and Feasibility Studies, which are usually performed together. The Remedial Investigation characterizes conditions at the site to identify the sources and extent of contamination. The Feasibility Study evaluates specific alternatives for cleaning up a site. The selected remedial action is documented in a Record of Decision (ROD). Requirements for the management of hazardous wastes are prescribed under RCRA. These guidelines regulate waste at all stages, from before it is generated until after its disposal. The act also establishes a permit program for hazardous waste storage, treatment, and disposal facilities. Permits identify the administrative and technical standards to which facilities must adhere. Lastly, NEPA provides a process for Federal agencies to identify and assess the alternatives to proposed actions to avoid or minimize the effect of these actions on the environment. Under this act, agencies must prepare an Environmental Impact Statement for all major actions that may significantly affect the environment. The act mandates agencies to make information available to Federal officials and citizens before decisions about selected alternatives are made. The selected cleanup alternative is documented in a ROD.

Environmental Restoration program activities include remediation of a large number of facilities, contaminated areas at the various Department sites, inactive waste disposal sites, uncontrolled release sites, and underground storage tanks. The scopes, schedules, and remediation standards for these activities are negotiated with the Environmental Protection Agency (EPA) and the States and are the subject of RCRA permits, Consent Orders and Compliance Agreements (COCAs), and CERCLA Federal Facility Agreements (FFAs). Funds requested for the Environmental Restoration program will provide for actions that must be undertaken immediately to minimize or prevent significant risk to workers, the public or the environment; activities required by current (in place or in negotiation) Federal, State, and local regulatory agreements; and support of other legal requirements and DOE Orders. The Environmental Restoration program currently manages, in both defense and non-defense appropriation accounts, remediation activities which include 320 projects at National Priorities List (NPL) sites; 80 CERCLA activities commonly referred to as Superfund projects; 97 RCRA closures; 108 RCRA corrective actions; and 169 decontamination and decommissioning projects.

2019

OVERVIEW - ENVIRONMENTAL RESTORATION (DEFENSE) (continued):

Before actual remediation work can begin, extensive site characterization/assessments must be conducted to determine the extent of contamination and risk involved. Assessment activities include sampling and analysis, modeling, reviewing historical records of plant operations, assessing the potential risks, and studies of appropriate remedial alternatives. Generally, once site characterization activities are completed, a final remedial alternative is selected and remediation begins. At all sites where environmental management activities are conducted, interim actions are used to address urgent risks and remove potential threats prior to the completion of detailed characterization studies and the selection of a final remedial alternative for the site. Interim actions include expedited response actions, removal actions and actions to stabilize and contain waste or offsite plume migration.

In addition to providing for those basic, essential assessment and remediation activities which address urgent risks and meet compliance and legal requirements, a prudent amount of funding has been included in the FY 1996 request for D&D activities across the DOE complex to address the backlog of facilities and sites requiring remediation. Over 7,000 contaminated buildings owned by the Department are no longer needed and require expensive monitoring until they can be safely dismantled. D&D efforts include such facilities as reactors, hot cells, production facilities, laboratories, processing plants, storage tanks, and other structures which have been contaminated from past Departmental activities. Performing additional D&D will: 1) reduce the need for future surveillance and maintenance (S&M), which will ultimately lower potential adverse worker health and safety incidences and lower S&M costs; (2) yield tangible results; and (3) contribute to the overall DOE site cleanup required by the numerous compliance agreements.

In response to the Department's commitment to improve management practices and to adopt performance based budgeting, the Environmental Restoration program tracks performance measures in four areas: 1) completed characterization/assessments; 2) completed interim and removal actions and expedited response actions; 3) completed remedial actions; and 4) completed final D&D projects. Characterizations/Assessments are denoted by a completed key assessment document such as a ROD, Corrective Measure Study, Closure Plan, D&D Plan, Proposed Plan, NEPA document, or No Action Decision. Interim and removal actions are any actions resulting in physical cleanup progress, reduction of exposure to contaminants or containment of a source term or any action to restrict access to contaminants. Final remedial actions include RCRA closures, RCRA final corrective measures, CERCLA final remedial actions, and completed underground tank programs. D&D final actions are completed when D&D objectives have been met and a report has been submitted for approval. In addition, the program tracks the status of on-going projects in the four performance areas. The budget request reflects specific details on the outputs which will be accomplished.

The Environmental Restoration budget request has been adjusted for projected productivity savings and contractors reduction savings which are discussed in the Environmental Management (EM) Executive Summary which precedes the EM budget justification documents. The EM Executive Summary addresses a number of initiatives being implemented in FY 1996. These include the use of prior year uncosted balances to offset the FY 1996 budget authority request, allocation of additional federal staff to the field, and working with regulators to prioritize requirements within current compliance agreements due to the outyear budget targets.

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(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Environmental Restoration

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Facilities and Sites (Defense) Operating Expenses	$ 1,454,447	$ 1,518,549	$ -138,625	$ 1,379,924	$ 1,575,973
SUBTOTAL	$ 1,454,447	$ 1,518,549	$ -138,625	$ 1,379,924	$ 1,575,973
Productivity Savings Initiative	0	-133,900	+133,900	0	0
TOTAL	$ 1,454,447	$ 1,384,649	$ -4,725	$ 1,379,924	$ 1,575,973
Summary Operating Expenses	$ 1,454,447	$ 1,384,649	$ -4,725	$ 1,379,924	$ 1,575,973
Total Program	$ 1,454,447	$ 1,384,649	$ -4,725	$ 1,379,924	$ 1,575,973
Staffing (FTE's)	479	769	0	769	786

2021

DEPARTMENT OF ENERGY
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(dollars in thousands)

SUMMARY OF CHANGES

Defense Environmental Restoration

FY 1995 Appropriation	$1,384,649
- Adjustment	-4,725
FY 1995 Adjusted	1,379,924
Facilities and Sites (Defense)	
- Decrease in funding from FY 1995 to FY 1996 for remediation activities is related to a combination of factors: contractor reduction savings; remedial investigations and feasibility studies (RI/FS) savings; project management costs savings; efficiency gains through increased federal personnel in the field; reduced overhead/indirect costs; decreases in the use of support service contracts; reduced assessment/remediation activities at LANL, Pantex, INEL, Y-12 Plant, and Hanford.	-70,547
- Increase will accelerate D&D activities which will ultimately lead to a decrease in future surveillance and maintenance costs and lessen the possibility of safety problems due to increasing deterioration of conditions at the various Departmental facilities. Major increases in FY 1996 are at the Mound Plant in Ohio, the Rocky Flats Plant in Colorado, the Battelle Columbus Laboratories in Ohio, and the Reactive Metals Inc., in Ohio.	+16,415
- Continue support of landlord activities at the Fernald site in Ohio and the K-25 site in Tennessee	+4
- Continue to support oversight and monitoring of surveillance and maintenance programs	-1,571
- Increase Government contribution to the Uranium Enrichment D&D Fund	+216,300
- Provide for compliance oversight for various States where cleanup efforts are underway.	+3,993
- Provide funding for additional FTEs provided through EM's FTE Pilot Program to support Environmental Restoration activities at field office sites. Funding for these additional FTEs in FY 1995 will be identified through productivity savings and transferred to the Program Direction account.	+31,455
FY 1996 Congressional Request	$1,575,973

2022

DEPARTMENT OF ENERGY
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FIELD OFFICE FUNDING BY SITE

Environmental Restoration

Field offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Pantex Plant	$ 13,820	$ 26,472	$ -2,350	24,122	9,139
Los Alamos National Laboratory	84,992	87,092	-8,187	78,905	64,804
Kansas City Plant	5,552	4,726	-1,156	3,570	6,322
Pinellas Plant	4,707	5,728	-899	4,829	4,000
Sandia National Laboratories	30,392	33,954	-2,164	31,790	22,884
Albuquerque Operations Office	28,296	25,774	-5,902	19,872	25,189
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 167,759	$ 183,746	$ -20,658	$ 163,088	$ 132,338
CHICAGO OPERATIONS OFFICE					
Ames Lab	$ 2,225	$ 1,361	$ -1,061	$ 300	$ 341
Argonne National Lab (West)	0	0	0	0	0
Chicago Operations Office	17,030	16,297	-603	15,694	20,441
Subtotal, CHICAGO OPERATIONS OFFICE	$ 19,255	$ 17,658	$ -1,664	$ 15,994	$ 20,782
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 87,956	$ 125,616	$ -9,363	$ 116,253	$ 87,914
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 47,503	$ 38,880	$ -4,275	$ 34,605	$ 49,671
OHIO FIELD OFFICE					
Fernald Environmental Managmeent Project	$ 299,128	$ 288,124	$ -30,413	$ 257,711	$ 256,330
Mound Plant	29,616	32,390	-2,944	29,446	44,868
Ohio Operations Office	10,931	7,818	0	7,818	14,867
Subtotal, OHIO OPERATION OFFICE	$ 339,675	$ 328,332	$ -33,357	$ 294,975	$ 316,065
OAK RIDGE OPERATIONS OFFICE					
Portsmouth Gaseous Diffusion Plant	$ 15,349	$ 0	$ 0	$ 0	$ 0
Y-12 Plant	44,193	33,742	0	33,742	15,570
K-25 Site	2,860	14,027	0	14,027	16,725
Oak Ridge Institute for Science & Education	1,464	1,239	0	1,239	1,700
Oak Ridge National Lab	1,633	13,016	0	13,016	20,116
Paducah Gaseous Diffusion Plant	9,165	0	0	0	0

2023

FIELD OFFICE FUNDING BY SITE - Environmental Restoration (Defense) (cont'd)

Field offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Oak Ridge Operations Office	35,231	61,171	-14,211	46,960	60,383
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 109,895	$ 123,195	$ -14,211	$ 108,984	$ 114,494
ROCKY FLATS OFFICE					
Rocky Flats Plant	$ 144,367	$ 152,899	$ -16,644	$ 136,255	$ 147,753
RICHLAND OPERATIONS OFFICE					
Richland Operations Office	$ 199,548	$ 238,179	$ -23,737	$ 214,442	$ 173,454
OAKLAND OPERATIONS OFFICE					
Energy Technology Engineering Center	$ 1,272	$ 1,170	$ -90	$ 1,080	$ 1,000
Lawrence Livermore National Lab	29,204	27,837	-1,837	26,000	25,500
Oakland Operations Office	3,059	5,370	-1,400	3,970	5,385
Subtotal, OAKLAND OPERATIONS OFFICE	$ 33,535	$ 34,377	$ -3,327	$ 31,050	$ 31,885
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Site	$ 71,655	$ 70,420	$ -6,664	$ 63,756	$ 99,863
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 233,299	$ 205,247	$ -4,725	$ 200,522	$ 401,754
SUBTOTAL	$ 1,454,447	$ 1,518,549	$ -138,625	$ 1,379,924	$ 1,575,973
Productivity Savings Initiative	0	-133,900	+133,900	0	0
TOTAL	$ 1,454,447	$ 1,384,649	$ -4,725	$ 1,379,924	$ 1,575,973

2024

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(dollars in thousands)

KEY ACTIVITY SUMMARY

ENVIRONMENTAL RESTORATION

I. Preface: Facilities and Sites (Defense)

The Facilities and Sites activity includes remedial actions and decontamination and dismantlement (D&D) projects to reduce and remove the potential risks to the environment and to human health and safety resulting from past Department of Energy (DOE) activities. The Environmental Restoration Program manages projects at numerous sites on the Environmental Protection Agency's (EPA) National Priorities List (NPL) along with other projects that include activities related to ore handling and processing, reactor, laboratory, and fuel fabrication facilities and sites. All Operations/Field Office environmental restoration activities have been designated either a Major System Acquisition (MSA) or a Major Project (MP) by DOE. For additional details on schedules and other site-specific information, please refer to the various Operating Expense Funded Project Data Sheets included with this submission. Comparable non-defense efforts are included under either the Energy Supply, Research and Development activities appropriation under the same title as shown here (i.e., Environmental Restoration/Facilities and Sites) or in the Uranium Enrichment Decontamination and Decommissioning Fund appropriation. Consolidated management and direction of both the defense and non-defense activities is provided by the Deputy Assistant Secretary for Environmental Restoration and funding is shown in the appropriate appropriation account.

The Environmental Restoration budget request includes funds to conduct actions that must be undertaken immediately to minimize or prevent significant risk to workers, the public or the environment; activities required by current (in place or in negotiation) Federal, State, and local regulatory agreements; and support of other legal requirements, DOE Orders, and a prudent amount of discretionary activities necessary for effective management of overall program efforts and appropriate levels of general support activities including necessary Federal program direction funding and travel expenses.

To provide maximum flexibility in addressing remediation efforts, all activities are budgeted under operating expenses and include capital equipment-type and construction-type activities. This is consistent with the manner in which Environmental Restoration activites were budgeted and approved by Congress in previous years. General crosscutting support efforts required for effective management and control of Environmental Restoration activities are also included in this budget.

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II. ENVIRONMENTAL RESTORATION PROGRAM BY SITE FOR DEFENSE FUNDED ACTIVITIES:

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Albuquerque Operations Office, NM	$ 28,296	$ 19,872	$ 25,189
Kansas City Plant, MO	5,552	3,570	6,322
Los Alamos National Laboratory, NM	84,992	78,905	64,804
Pantex Plant, TX	13,820	24,122	9,139
Pinellas Plant, FL	4,707	4,829	4,000
Sandia National Laboratory, CA	4,448	4,244	2,704
Sandia National Laboratory, NM	25,944	27,546	20,180
Ames Laboratory, IA	2,225	300	341
Battelle Columbus Laboratories, OH	2,364	1,800	4,694
Chicago Operations Office, IL	2,160	7,304	4,623
Reactive Metals, Inc., OH	12,506	6,590	11,124
Idaho Operations Office, ID	3,313	2,207	3,885
Idaho National Engineering Laboratory, ID	84,843	114,046	84,029
Nevada Operations Office, NV	47,503	34,605	49,671
K-25 Site, TN	2,508	14,027	16,725
Oak Ridge Reservation	9,759	12,035	14,921
Oak Ridge Associated Universities, TN	1,464	1,239	1,700
Oak Ridge National Laboratory, TN	1,985	13,016	20,116
Oak Ridge Operations Office, TN	25,472	34,925	45,462
Paducah Gaseous Diffusion Plant, KY	9,165	0	0
Portsmouth Gaseous Diffusion Plant, OH	15,349	0	0
Y-12 Plant, TN	44,193	33,742	15,570
Ohio Operations Office, OH	10,931	7,818	14,867
Mound Plant, OH	29,816	29,446	44,868
Fernald Environmental Management Project, OH	299,128	257,711	256,330
Richland Operations Office, WA	2,877	2,586	4,552
Hanford Site, WA	196,671	211,856	168,902
Rocky Flats Operations Office, CO	1,325	2,523	4,441
Rocky Flats Plant, CO	143,042	133,732	143,312
Lawrence Livermore National Laboratory, CA	29,204	26,000	25,500
Oakland Operations Office, CA	3,059	3,970	5,385
Santa Susana Field Laboratory, CA	1,272	1,080	1,000
Savannah River Site, SC	71,655	63,756	99,863
Headquarters	103,494	66,822	51,754
Government Contributions to UE D&D Fund	129,805	133,700	350,000
TOTAL	$1,454,447	$1,379,924	$1,575,973

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ACAP	Atomic City Auto Parts
AE	Architectural Engineering
AIP	Agreement-in-Principle
ANAP	Abandoned Nitric Acid Pipeline
ANL	Argonne National Laboratory
ALO	Albuquerque Operations Office
ARA	Auxiliary Reactor Area
ARVFS	Army Re-entry Vehicle Facility Site
ATSDR	Agency for Toxic Substances and Disease Registry
BCL	Battelle Columbus Laboratories
BORAX	Boiling Water Reactor Experiment
CAPCA	Closure and Post-Closure Activities
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFA	Central Facilities Area
CHO	Chicago Operations Office
CLP	Contract Laboratory Program
CMI	Corrective Measure Implementation
CMS	Corrective Measure Study
CO	Consent Order
COCA	Consent Order and Compliance Agreement
CPP	Chemical Processing Plant
DARA	Disposal Area Remedial Action
D&D	Decontamination and Decommissioning
DNAPL	Dense Non-Aqueous Phased Liquids
DOE	Department of Energy
EBR	Experimental Breeder Reactor
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Impact Statement
EM	Environmental Restoration and Waste Management
EMTC	Environmental Management Technical Center
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ER	Environmental Restoration
ERA	Expedited Removal Action
ERDF	Environmental Restoration Disposal Facility
ERMC	Environmental Restoration Management Contractor
ETR	Experimental Test Reactor
EWMF	Engineered Waste Management Facility
FEMP	Fernald Environmental Management Project (formerly the Feed Materials Production Center)
FFA	Federal Facility Agreement
FFCA	Federal Facility Compliance Act
FS	Feasibility Study
FTEs	Full-Time Equivalents
GAO	General Accounting Office
GCEP	Gaseous Centrifuge Experimental Project
GIS	Geographical Information System
GJPO	Grand Junction Projects Office
GSA	General Services Area
HASM	Hanford Analytical Services Management
HAZWRAP	Hazardous Waste Remedial Action Project
HE	High Explosives
HEDR	Hanford Environmental Dose Reconstruction
HEIS	Hanford Environmental Information System
HRA	Hanford Remedial Action
HSWA	Hazardous and Solid Waste Amendments
HVAC	Heating, Ventilation and Air Conditioning
IAG	Interagency Agreement
ICPP	Idaho Chemical Processing Plant
INEL	Idaho National Engineering Laboratory
IRM	Interim Response Measure
ITRD	Innovative Treatment Remediation Demonstration
LANL	Los Alamos National Laboratory
LCCDA	Liquid Corrosive Chemical Disposal Area
LDR	Land Disposal Restriction
LEFPC	Lower East Fork Poplar Creek
LFI	Limited Field Investigation
LIMS	Laboratory Information Management System
LLNL	Lawrence Livermore National Laboratory
LLRWDF	Low-Level Radioactive Waste Disposal Facility
LLW	Low-Level Waste
LOFT	Loss of Fluid Test
LSA	Low Specific Activity
MAWS	Minimum Additive Waste Stabilization
MP	Major Project
MWDF	Mixed Waste Disposal Facility
MWMF	Mixed Waste Management Facility
MSA	Major System Acquisition
MTR	Materials Test Reactor
NEPA	National Environmental Policy Act
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NOD	Notice of Deficiency
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NRDWL	Non-Radioactive Dangerous Waste Landfill
NTS	Nevada Test Site
ORAD	Operations and Regulatory Affairs Division
ORAU	Oak Ridge Associated Universities
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations Office
OU	Operable Unit
PBF	Power Burst Facility
PCB	Polychlorinated Biphenyls
PEIS	Programmatic Environmental Impact Statement
PNL	Pacific Northwest Laboratory
PRP	Potential Responsible Party
QA	Quality Assurance
QARD	Quality Assurance Requirements Documentation
QAT	Quality Action Team

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QRA	Qualitative Risk Assessment
RAD	Radioactive
RAIP	Remedial Action Implementation Plan
RAPIC	Remedial Action Program Information Center
RARA	Radiation Area Remedial Action
RCRA	Resource Conservation & Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RFP	Rocky Flats Plant
RI	Remedial Investigation
RMI	Reactive Metals, Inc.
RMPE	Reduction of Mercury in Plant Effluent
ROD	Record of Decision
RWMC	Radioactive Waste Management Complex
S&M	Surveillance and Maintenance
SARA	Superfund Amendments & Reauthorization Act
SED	Separations Engineering Development
SFE	Stored Fuel Equipment
SFO	San Francisco Operations Office
SM	Special Metallurgical
SNL/CA	Sandia National Laboratory/California
SNL/NM	Sandia National Laboratory/New Mexico
SPERT	Special Power Excursion Reactor Test
SPRU	Separations Process Research Unit
SRL	Savannah River Laboratory
SRS	Savannah River Site
SSFL	Santa Susana Field Laboratory
SST	Single Shell Tank
SWMU	Solid Waste Management Unit
SWRI	Site-wide Remedial Investigation
TA	Technical Area
TAN	Test Area North
TCE	trichloroethylene
TPA	Tri-Party Agreement
TRA	Test Reactor Area
TRU	Transuranic
TSD	Treatment, Storage and Disposal
TSF	Technical Support Facilities
TTAF	Test Train Assembly Facility
UEFPC	Upper East Fork Poplar Creek
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WAG	Waste Area Group
WCF	Waste Calcining Facility

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II. A. Summary Table: Facilities and Sites (Defense)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Remedial Action				
Albuquerque				
Albuquerque Operations Office (ALO), NM	$ 21,873	$ 8,725	$ 8,511	$ -214
Kansas City Plant, MO	5,552	3,570	6,322	2,752
Los Alamos National Laboratory (LANL), NM	80,086	73,070	59,552	-13,518
Pantex Plant, TX	13,820	24,122	9,139	-14,983
Pinellas Plant, FL	3,077	4,829	4,000	-829
Sandia National Laboratories/ California (SNL/CA)	4,448	4,244	2,704	-1,540
Sandia National Laboratories/New Mexico (SNL/NM)	25,858	27,512	20,082	-7,430
Subtotal, Albuquerque	$ 154,714	$ 146,072	$ 110,310	$ -35,762
Chicago				
Ames Laboratory, IA	$ 2,225	$ 300	$ 341	$ 41
Chicago Operations Office (CHO), IL	228	4,627	0	-4,627
Subtotal, Chicago	$ 2,453	$ 4,927	$ 341	$ -4,586
Idaho				
Idaho National Engineering Laboratory (INEL), ID	$ 75,383	$ 107,530	$ 76,943	$ -30,587
Subtotal, Idaho	$ 75,383	$ 107,530	$ 76,943	$ -30,587
Nevada				
Nevada Test Site (NTS), NV	$ 43,856	$ 30,151	$ 43,471	$ 13,320
Subtotal, Nevada	$ 43,856	$ 30,151	$ 43,471	$ 13,320
Oak Ridge				
Oak Ridge Associated Universities (ORAU), TN	$ 1,464	$ 1,239	$ 1,700	$ 461
Oak Ridge National Laboratory (ORNL), TN	1,633	13,016	20,116	7,100
Oak Ridge Operations Office (ORO), TN	18,064	16,748	20,835	4,087
Oak Ridge Reservation (ORR), TN	9,759	12,035	14,921	2,886
Paducah Gaseous Diffusion Plant, KY	9,165	0	0	0
Portsmouth Gaseous Diffusion Plant, OH	15,349	0	0	0
Y-12 Plant, TN	29,428	24,821	9,080	-15,741
Subtotal, Oak Ridge	$ 84,862	$ 67,859	$ 66,652	$ -1,207
Ohio				
Mound Plant, OH	$ 13,552	$ 15,401	$ 23,727	$ 8,326
Fernald Environmental Management Project (FEMP), OH	194,233	184,302	189,478	5,176

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II. A. Summary Table: Facilities and Sites (Defense) - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Subtotal, Ohio	$ 207,785	$ 199,703	$ 213,205	$ 13,502
Richland				
Hanford Site, WA	$ 152,480	$ 166,142	$ 120,032	$ -46,110
Subtotal, Richland	$ 152,480	$ 166,142	$ 120,032	$ -46,110
Rocky Flats				
Rocky Flats Plant (RFP), CO	$ 140,062	$ 128,834	$ 135,112	$ 6,278
Subtotal, Rocky Flats	$ 140,062	$ 128,834	$ 135,112	$ 6,278
Oakland				
Lawrence Livermore National Laboratory (LLNL), CA	$ 29,204	$ 26,000	$ 25,500	$ -500
Oakland Operations Office (OAK), CA	560	822	175	-647
Subtotal, Oakland	$ 29,764	$ 26,822	$ 25,675	$ -1,147
Savannah River				
Savannah River Site (SRS), SC	$ 54,652	$ 51,460	$ 82,280	$ 30,820
Subtotal, Savannah River	$ 54,652	$ 51,460	$ 82,280	$ 30,820
Headquarters				
Headquarters	$ 86,711	$ 50,530	$ 29,662	$ -20,868
Dose Reconstruction	800	800	800	0
Maxey Flats, KY	2,200	2,200	8,000	5,800
Government Contribution to D&D Fund	129,805	133,700	350,000	216,300
Subtotal, Headquarters	$ 219,516	$ 187,230	$ 388,462	$ 201,232
Subtotal, Remedial Action	$ 1,165,527	$ 1,116,730	$ 1,262,483	$ 145,753
Decontamination and Decommissioning (D&D)				
Albuquerque				
Los Alamos National Laboratory (LANL), NM	$ 4,906	$ 5,835	$ 5,252	$ -583
Pinellas Plant, FL	1,630	0	0	0
SNL/NM	86	34	98	64
Subtotal, Albuquerque	$ 6,622	$ 5,869	$ 5,350	$ -519
Chicago				
Battelle Columbus Laboratories (BCL), OH	$ 2,364	$ 1,800	$ 4,694	$ 2,894
CHO, IL	173	175	183	8

II. A. Summary Table: Facilities and Sites (Defense) - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Reactive Metals, Inc. (RMI), OH	12,508	6,590	11,124	4,534
Subtotal, Chicago	$ 15,043	$ 8,565	$ 16,001	$ 7,436
Idaho				
INEL, ID	$ 7,377	$ 4,916	$ 5,144	$ 228
Subtotal, Idaho	$ 7,377	$ 4,916	$ 5,144	$ 228
Nevada				
NTS, NV	$ 555	$ 308	$ 552	$ 244
Subtotal, Nevada	$ 555	$ 308	$ 552	$ 244
Oak Ridge				
K-25 Site, TN	$ 2,860	$ 2,928	$ 4,065	$ 1,137
Y-12, TN	14,765	8,921	6,490	-2,431
Subtotal, Oak Ridge	$ 17,625	$ 11,849	$ 10,555	$ -1,294
Ohio				
Mound Plant, OH	$ 16,064	$ 14,045	$ 21,141	$ 7,096
FEMP, OH	38,587	24,520	19,520	-5,000
Subtotal, Ohio	$ 54,651	$ 38,565	$ 40,661	$ 2,096
Richland				
Hanford Site, WA	$ 41,171	$ 43,014	$ 45,941	$ 2,927
Subtotal, Richland	$ 41,171	$ 43,014	$ 45,941	$ 2,927
Rocky Flats				
Rocky Flats Plant, CO	$ 2,980	$ 4,898	$ 8,200	$ 3,302
Subtotal, Rocky Flats	$ 2,980	$ 4,898	$ 8,200	$ 3,302
Oakland				
Santa Susana Field Laboratory (SSFL), CA	$ 1,272	$ 1,080	$ 1,000	$ -80
Subtotal, Oakland	$ 1,272	$ 1,080	$ 1,000	$ -80
Savannah River				
SRS, SC	$ 8,158	$ 4,150	$ 6,225	$ 2,075
Subtotal, Savannah River	$ 8,158	$ 4,150	$ 6,225	$ 2,075

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II. A. Summary Table: Facilities and Sites (Defense) - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Subtotal, Decontamination and Decommissioning (D&D)	$ 155,454	$ 123,214	$ 139,629	$ 16,415
Landlord				
Ohio				
FEMP, OH	$ 66,308	$ 48,889	$ 47,332	$ -1,557
Subtotal, Ohio	$ 66,308	$ 48,889	$ 47,332	$ -1,557
Oak Ridge				
K-25 Site, TN	$ 0	$ 11,099	$ 12,660	$ 1,561
Subtotal, Oak Ridge	$ 0	$ 11,099	$ 12,660	$ 1,561
Subtotal, Landlord	$ 66,308	$ 59,988	$ 59,992	$ 4
Long-Term Surveillance and Maintenance				
Richland				
Hanford Site, WA	$ 0	$ 0	$ 229	$ 229
Subtotal, Richland	$ 0	$ 0	$ 229	$ 229
Savannah River				
Savannah River Site, SC	$ 3,950	$ 3,436	$ 1,636	$ -1,800
Subtotal, Savannah River	$ 3,950	$ 3,436	$ 1,636	$ -1,800
Subtotal, Long-Term Surveillance and Maintenance	$ 3,950	$ 3,436	$ 1,865	$ -1,571
Compliance Oversight				
Albuquerque	$ 1,345	$ 4,591	$ 5,135	$ 544
Chicago	150	232	300	68
Idaho	1,883	1,600	1,942	342
Nevada	1,952	2,128	2,000	-128
Oak Ridge	282	10,800	11,400	600
Richland	3,020	2,700	2,700	0
Oakland	200	625	625	0
Savannah River	2,528	1,495	4,062	2,567
Subtotal, Compliance Oversight	$ 11,360	$ 24,171	$ 28,164	$ 3,993
Program Direction				
Headquarters	$ 13,783	$ 13,292	$ 13,292	$ 0
Field Offices	38,065	39,093	70,548	31,455

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II. A. Summary Table: Facilities and Sites (Defense) - Cont'd

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Subtotal, Program Direction	$ 51,848	$ 52,385	$ 83,840	$ 31,455
Total, Facilities and Sites (Defense)	$ 1,454,447	$ 1,379,924	$ 1,575,973	$ 196,049

II. B. Laboratory and Facility Funding Table: Facilities and Sites (Defense)

Albuquerque Operations Office	$ 28,296	$ 19,872	$ 25,189	$ 5,317
Kansas City Plant	5,552	3,570	6,322	2,752
Los Alamos National Laboratory	84,992	78,905	64,804	-14,101
Mound Plant	29,616	29,446	44,868	15,422
Pantex Plant	13,820	24,122	9,139	-14,983
Pinellas Plant	4,707	4,829	4,000	-829
Sandia National Laboratories	30,392	31,790	22,884	-8,906
Ames Lab	2,225	300	341	41
Chicago Operations Office	17,030	15,694	20,441	4,747
Fernald Environmental Management Project	310,059	265,529	271,197	5,668
Washington Headquarters	233,299	200,522	401,754	201,232
Idaho National Engineering Lab	87,956	116,253	87,914	-28,339
Nevada Operations Office	47,503	34,605	49,671	15,066
K-25 Site	2,860	14,027	16,725	2,698
Oak Ridge Operations Office	35,231	46,960	60,383	13,423
Oak Ridge Institute for Science & Education	1,464	1,239	1,700	461
Oak Ridge National Lab	1,633	13,016	20,116	7,100
Paducah Gaseous Diffusion Plant	9,165	0	0	0
Portsmouth Gaseous Diffusion Plant	15,349	0	0	0
Y-12 Plant	44,193	33,742	15,570	-18,172
Rocky Flats Plant	144,367	136,255	147,753	11,498
Richland Operations Office	199,548	214,442	173,454	-40,988
Lawrence Livermore National Lab	29,204	26,000	25,500	-500
Oakland Operations Office	3,059	3,970	5,385	1,415
Energy Technology Engineering Center	1,272	1,080	1,000	-80
Savannah River Site	71,655	63,756	99,863	36,107
Total, Facilities and Sites (Defense)	$ 1,454,447	$ 1,379,924	$ 1,575,973	$ 196,049

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facilities and Sites (Defense)			
Remedial Action			
Albuquerque			
Albuquerque Operations Office (ALO), NM	Continued cost and schedule performance efforts and technical status monitoring; continued program support activities.	Continue cost and schedule performance efforts and technical status monitoring; continue program support activities.	Will continue cost and schedule performance efforts and technical status monitoring; will continue program support activities.
	Continued to provide funding for remediation planning at the South Valley, NM site, including design of a deep ground water pump and treat system; constructed and began operating shallow ground water remediation system; plugged old municipal wells.	Provide funding for construction of remediation facilities at the South Valley, NM site, including construction and operation of a deep ground water pump and treat system; continue operating shallow ground water remediation system.	Will continue funding to operate and maintain shallow ground water pump and treat system and complete construction and initiate operation of deep ground water remediation system at the South Valley NM site.
	$ 21,873	$ 8,725	$ 8,511
Kansas City Plant, MO	Completed Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report for Department 26; completed RFI field work for maintenance vehicle repair shop sump and Department 27 inside and initiated RFI reports; completed the RFI report for the trichloroethylene (TCE) still area soils; submitted Corrective Measures Study (CMS) reports for the Outfall 001 Raceway/Northeast Area and the Miscellaneous Contaminated Sites to EPA; initiated combined CMS in a new subproject for five Kansas City Plant (KCP) projects: Department 26, Department 27 inside, Plating Building, TCE still area soils, and maintenance vehicle repair shop sump; continued program management and support activities.	Submit RFI report for Department 27 Inside and Maintenance Vehicle Repair Shop Sump; complete CMS report for Outfall 001/Northeast Area and miscellaneous contaminated sites; submit combined CMS report for Department 26, Department 27 inside, Plating Building, TCE still area soils, and maintenance vehicle repair shop sump; continue monitoring activities at the South Lagoon; continue program management and support activities.	Will complete combined CMS report for Department 26, inside Department 27, Plating Building, TCE still area soils, and the Maintenance vehicle repair shop sump; will initiate Corrective Measures Implementation (CMI) for miscellaneous contaminated sites and Outfall 001 Raceway/Northeast Area; if required, will submit draft CMS report for RCRA South Lagoon; will continue program management support activities.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Kansas City Plant, MO (Cont'd)	Continued interim ground water remediation at the Northeast Area, TCE still area, and tank farm area; continued ground water monitoring; started interim measure design at miscellaneous polychlorinated biphenyls (PCB)-contaminated sites; continued monitoring activities at RCRA South Lagoon; completed Corrective Measures Implementation (CMI) and Confirmation Study Report for Abandoned Indian Creek Outfall.	Continue interim ground water remediation at the Northeast Area, TCE still area, and tank farm area; continue ground water monitoring; initiate and complete interim measure remediation at miscellaneous PCB-contaminated sites; start corrective measures implementation (CMI) program plan and corrective measures design for miscellaneous contaminated sites and Outfall 001/Northeast Area.	Will submit preliminary corrective measures implementation program plan and corrective measures design to Environmental Protection Agency (EPA) for miscellaneous contaminated sites. Will complete Corrective Measures Implementation (CMI) program plan, and complete final corrective measures design for Outfall 001 Raceway/Northeast Area. Will continue interim ground water remediation; will continue ground water monitoring; will continue monitoring activities at RCRA south Lagoon; will start corrective measures design for Department 26; will start corrective measures implementation program plan and corrective measures design for plating building, TCE still area soils, Maintenance vehicle repair shop sump and Department 27 inside.
	$ 5,552	$ 3,570	$ 6,322
Los Alamos National Laboratory (LANL), NM	Initiated/continued field work for the concurrent assessment of 19 operable units (OUs), using environmental analytical chemistry support including four mobile laboratories and nine off-site contractor laboratories for screening and analysis of field samples; completed development of the installation-wide RFI work plan; continued National Environmental Policy Act (NEPA) document preparation; completed development of four RFI work plans due to EPA in May 1994 and continued development of assessment work plan for ONC OU (canyons); initiated field work on EPA-approved work plans, submitted in May 1993; continued preparation of NEPA	Submit completed assessment work plan for one OU (canyons); continue assessment field work for 19 OUs using environmental analytical chemistry support including four mobile laboratories and nine off-site contractor laboratories; complete preparation of the NEPA Environmental Assessment of the Mixed Waste Disposal Facility for remediation waste and submit draft RCRA permit application to regulators; continue program management activities.	Will begin assessment field work for the Canyons Operable Unit; will continue assessment field work at all Field Units using environmental analytical chemistry support including radioactive and hazardous constituent mobile screening laboratories and offsite analytical laboratories; will continue program management and NEPA documentation preparation activities including contributing to the Sitewide Environmental Impact Statement; will respond to regulator's comments on the draft RCRA permit application for the Mixed Waste Disposal Facility; will continue program management activities.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Los Alamos National Laboratory (LANL), NM (Cont'd)	Environmental Assessment of the Mixed Waste Disposal Facility; continued program management activities.		
	Completed Title I design development and continued permitting activities for construction of the Mixed Waste Disposal Facility (MWDF); continued closure of the TA-35 Waste Oil Storage Area.	Initiate Title II design development and continue permitting activities for construction of the MWDF; complete closure of the TA-35 Waste Oil Storage Area; initiate several voluntary corrective actions with obvious remedies.	Will initiate/complete several voluntary corrective actions with obvious remedies; will complete Title II design development for the MWDF.
	$ 80,086	$ 73,070	$ 59,552
Pantex Plant, TX	Obtained approval of work plans for the HE/radioactive (RAD) sites and the firing sites; initiated Phase I field work for the construction landfills, the priority release sites, the chemical spills, HE/RAD sites, and the burning grounds; completed Phase I RFI field work for the supplemental verification sites, construction landfills, priority release sites, and the burning grounds; initiated corrective action plan for underground storage tanks at other locations; undertook RFI Phase II field work for zone 12 ground water fire training area burn pits, ditches and playas; submitted RFI reports for the old sewage treatment plant and the cooling tower; continued work on draft RFI report for fire training area burn pits and corrective action plan for formerly leaking underground storage tanks; continued program management and support activities.	Complete RFI field work for the chemical release sites, the firing sites, and the HE/RAD sites; initiate RFI report for supplemental verification sites; complete RFI reports for the burning grounds, the ditches and playas, the zone 12 ground water, the construction landfills, the chemical spills, fire training area burn pits, priority release sites, and the HE/RAD sites; defer completion of the RFI report for the firing sites until FY 1996; continue work on cooling tower and old sewage treatment plant if "No Further Action" recommendation not accepted; complete corrective action plan for formerly leaking Underground Storage Tanks (USTs); complete corrective action plan for USTs at other locations; continue program management and support activities.	Will submit RFI report for the HE/RA sites and supplemental verfication sites; will initiate CS activities for miscellaneous chemical spill sites, landfills, and HE/RAD sites; will submit corrective measures study for the ditches and playas and zone 12 ground water.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Pantex Plant, TX (Cont'd)	Initiated interim corrective measures for the fire training area burn pits.	Prepare CMI plan and begin corrective measures design for formerly leaking USTs; initiate corrective measures planning for former cooling tower; complete interim corrective measures for fire training area burn pits; initiate corrective measures implementation plan for USTs at other locations.	Will submit corrective measures implementation plans for the former cooling tower, the old sewage treatment plant, the formerly leaking USTs, and the other USTs; will initiate corrective measures design for USTs and other locations.
	$ 13,820	$ 24,122	$ 9,139
Pinellas Plant, FL	Provided for the Peak Oil Potential Responsible Party (PRP) contribution; completed CMS activities for two areas within the miscellaneous sites; completed assessment activities for two additional site areas; initiated assessment activities for one additional site area.	Provide for the PRP contribution; complete assessment activities for one additional site area.	Will provide for the PRP contribution.
	Continued interim remediation of miscellaneous sites; initiated the final remedial action plan for the 4.5 Acre Site; developed and implemented interim corrective measures plan for West Fenceline Area; continued remedial action on the 4.5 Acre Site; continued program management and support activities.	Initiate and complete construction of final corrective measures for miscellaneous sites; operate the interim corrective measures at West Fenceline Area; complete the final remedial action plan for the 4.5 acre site; continue remedial action on the 4.5 Acre Site; continue program management and support activities.	Will continue operations of the interim corrective measure at the West Fenceline Area; will continue remedial actions for the 4.5 Acre Site and miscellaneous sites; will continue program management activities.
	$ 3,077	$ 4,829	$ 4,000
Sandia National Laboratories/ California (SNL/CA)	Continued ground water monitoring at the Navy landfill and pilot studies at the Fuel Oil Spill Site; continued program management activities.	Continue ground water monitoring and initiate feasibility study for the Navy landfill if required; continue pilot studies at the Fuel Oil Spills Site; continue program management activities.	Will continue Fuel Oil Spill bioremediation pilot study; will continue Navy Landfill ground water monitoring and complete ground water characterization report; will continue performing program management activities.

III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Sandia National Laboratories/ California (SNL/CA) (Cont'd)	$ 4,448	$ 4,244	$ 2,704
Sandia National Laboratories/New Mexico (SNL/NM)	Continued assessment activities at the Chemical Waste Landfill, Mixed Waste Landfill, Septic Tanks and Drainfields, Leaking Underground Storage Tanks, Tech Areas 1,2,3, and 5, Canyons, Central Coyote, Foothills, and Southwest Test Areas; continued assessment activities at the Kauai Test Facility, Liquid Waste Disposal System, and Tijeras Arroyo; continue sitewide hydrogeoligical characterization and NEPA activities; continued management support activities for the Salton Sea Test Base, Tonopah Test Range, and various Offsite Area projects; continued program management and technical support activities (Note - since the submissions of the FY 1995 Congressional Budget, several subprojects have been combined to improve oversight efficiency, as a result, some subproject titles are new).	Continue assessment activities at the Chemical Waste Landfill, Mixed Waste, Landfill, Septic Tanks and Drainfields, Leaking Underground Storage Tanks, Tech Areas 1 and 2, the Canyons, Central Coyote, Foothills, and Southwest Test Areas, Kauai Test Facility, Liquid Waste Disposal System, and Tijeras Arroyo; continue sitewide hydrogeological characterization and NEPA activities; continue management support activities for the Salton Sea Test Base, Tonopah Test Range, and various Offsite Area projects; continue program management and technical support activities; install Chemical Waste Landfill vapor extraction system.	Will continue assessment activities at the Chemical Waste Landfill, Mixed Waste Landfill, Septic Tanks and Drainfields, Tech Areas 1,2,3, and 5, and the Canyons, Central Coyote, Foothills, and Southwest Test Areas, Liquid Waste Disposal System; and Tijeras Arroyo; will continue sitewide hydrogeological characterization and NEPA activities; will continue program management and technical support activities.
	$ 25,858	$ 27,512	$ 20,082
Subtotal, Albuquerque	$ 154,714	$ 146,072	$ 110,310

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago			
Ames Laboratory, IA	Completed assessment and source removal at the old chemical disposal site; completed assessment of UST; provided program management support.	Initiate ground water monitoring at the old chemical disposal site; initiate ground water monitoring related to UST contamination; complete remedial action work plan for the old chemical disposal site; provide program management support.	Will continue ground water monitoring at old chemical disposal site; will continue ground water monitoring related to UST contamination; will provide program management support.
	$ 2,225	$ 300	$ 341
Chicago Operations Office (CHO), IL	Continued program support activities and technical support to environmental restoration efforts.	Continue program support activities and technical support to environmental restoration efforts, complete assessment at Site A/Plot M.	Program support funded under Non-Defense.
	Initiated removal activities (abandon wells, remove USTs and debris) at Site A/Plot M.	Complete removal activities (abandon wells, remove USTs and debris) at Site A/Plot M; complete waste shipment at Ames old chemical disposal site.	Program Support funded under Non-Defense.
	$ 228	$ 4,627	$ 0
Subtotal, Chicago	$ 2,453	$ 4,927	$ 341

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho			
Idaho National Engineering Laboratory (INEL), ID	TEST AREA NORTH (TAN) (WAG 1)	TAN	TAN
	Completed ground water RI/FS and draft ROD; completed preliminary assessment for the miscellaneous contamination sites.	Initiate preparation of the statement-of-work (SOW) work plan for Waste Area Group (WAG) 1 comprehensive RI/FS; submit remedial design SOW for the TAN comprehensive ground water action.	Will develop comprehensive WAG 1 RI/FS work plan and will initiate field implementation.
	Continued interim action at the TAN injection well (processed 357,000 gallons of ground water to remove 3,000 pounds of organic waste). Removed sludge from Technical Support Facility (TSF) disposal pond; conducted removal activities at OU1-03 bottle site and OU1-08 PCB transformers.	Continue operation of extraction facility built for the TAN injection well interim action; initiate and complete remedial action and operations and maintenance report for injection well interim action; sign ground water final action ROD. Complete removal actions initiated in FY-94. Initiate OU1-07B (Test Support Facility) remedial design/remedial action (RD/RA) SOW.	Will continue TAN ground water RD/RA activities; will continue operation of ground water treatment facility.
	TEST REACTOR AREA (TRA) (WAG 2)	TRA	TRA
	Initiated comprehensive RI/FS; completed three preliminary assessments for Hot Waste Tanks, Cooling Towers, and Material Test Reactor (MTR)-Canal.	Submit work plan for the comprehensive RI/FS and initiate field implementation.	Will complete WAG 2 draft comprehensive RI/FS Report.
	Completed interim action and final RA Report for the warm waste pond sediments; performed second round post-ROD monitoring for perched water; initiated third round post-ROD monitoring.	Continue post-ROD monitoring for perched water.	Will continue post-ROD monitoring for perched water.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho National Engineering Laboratory (INEL), ID (Cont'd)	IDAHO CHEMICAL PROCESSING PLANT (ICPP) (WAG 3)	ICPP	ICPP
	Completed preliminary assessment activities at seven OUs; initiated activities for the comprehensive RI/FS; completed two time critical removal actions (CPP-740/SFE-20/CPP-81).	Submit the draft work plan for the WAG 3 comprehensive RI/FS; initiate preparation of draft ROD.	Will complete WAG 3 comprehensive draft RI/FS Report.
	CENTRAL FACILITIES AREA (CFA) (WAG 4)	CFA	CFA
	Completed the RI/FS process at Landfills II and III; continued preliminary assessments at CFA OUs 06 and 08.	Complete the proposed plan and draft ROD for Landfills II and III; initiate preliminary assessments at CFA operable units 05 and 09 (CFA pond and transformer sites). Complete preliminary assessment at OU4-06 and OU-08 (lead/solvent sites and sewage plant); complete mercury report from CFA Waste Calcine pit removal action.	Will complete preliminary assessment report for OU-05 and OU-09.
	Initiated removal action at CFA Waste Calcine Pit.	Complete RD/RA SOW f Landfill II and III.	Will complete RD/RA work plan for Landfill II and III.
	POWER BURST FACILITY (PBF)/AUXILIARY REACTOR AREA (ARA) (WAG 5)	PBF/ARA	PBF/ARA
	Installed three ground water monitoring wells within the ARA facility; Continued RI/FS for Stationary Low-Power Reactor-1 (SL-1) burial ground.	Complete ROD for SL-1 burial ground; initiate two preliminary assessments (OU 5-01, 04); drill three additional ground water wells to assess abandoned PBF injection wells and ground water.	Will initiate and complete comprehensive WAG 5 RI/FS Scope of Work.
	Continued interim action at the PBF evaporation pond; completed removal action for ARA III radioactive leach pond.	Complete interim action at the PBF evaporation pond; complete RD/RA SOW for SL-1 and Boiling Water Reactor Experiment (BORAX-1).	Will continue RD/RA activities for SL-1 burial ground in preparation for FY 1997 remedial action.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho National Engineering Laboratory (INEL), ID (Cont'd)	EXPERIMENTAL BREEDER REACTOR NO. 1 (EBR-1) (WAG 6)	EBR-1	EBR-1
	Completed two preliminary scoping assessments at PBF/ARA SPERT Ponds and Blowdown Pits (OU5-02, 03); RI/FS for BORAX burial site to be completed as part of WAG-5, SL-1 burial ground RI/FS (OU5-05); continued EBR soil stabilization activities.	Continue EBR soil stabilization activities.	No activity, incorporated in other WAGs.
	RADIOACTIVE WASTE MANAGEMENT COMPLEX (RWMC) (WAG 7)	RWMC	RWMC
	Completed the Vapor Vacuum Extraction treatability study for the Vadose Zone Organics; continued routine monitoring and performed aquifer stress test and aquifer infiltration test for the RWMC Groundwater Pathway; initiated RI/FS work plan for trausuranic (TRU)-contaminated pits and trenches.	Complete the RI/FS SOW for TRU-contaminated pits and trenches; initiate SOW for the comprehensive RI/FS; conduct assessment activities for the ground water pathway; continue aquifer stress test demonstration and data evaluation.	Will initiate work plan, RI/Baseline Risk Assessment (BRA) report and will initiate RI/FS report for TRU-contaminated pits and trenches; will initiate RI/BRA report and RI/FS work plan for WAG 7 comprehensive RI.
	Continued Pad A remediation; completed proof-of-process testing for the Pit 9 interim action; initiated remedial design and remedial action work plan for Vapor Vacuum Extraction for the Vadose Zone Organics.	Complete Pad A remediation; initiate limited production test for the Pit 9 interim action; continue remedial action work plan and initiate remediation for the Vadose Zone Organics.	Will complete Pad A RA report and initiate monitoring; will begin installation and testing of large scale vapor vacuum extraction system for Vadose Zone organics; will initiate RA report for Vadose Zone organics; will continue limited production test for Pit 9.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho National Engineering Laboratory (INEL), ID (Cont'd)	MISCELLANEOUS SITES (WAG 10) Completed RAD contaminated soils RI/FS SOW and initiate RI/FS; updated the databases and the modeling effort for the Snake River Plain Aquifer; completed preliminary assessment for the Liquid Corrosive Chemical Disposal Area.	MISCELLANEOUS SITES Complete RAD contaminated soils RI/FS, BRA, and initiate proposed plan; continue to monitor well drilling for comprehensive Snake River Plan Aquifer RI/FS; continue updating the databases and the modeling effort for the Snake River Plain Aquifer; continue removal action and scoping assessment for ordnance areas in OU-10-03.	MISCELLANEOUS SITES Will initiate preliminary assessment of Organic Moderated Reactor Experiment Leach Pond; will continue preliminary scoping assessment field work for ordnance area (OU 10-03); will complete RAD contaminated soils proposed plan and ROD; continue to monitor well drilling for comprehensive Snake River Plain Aquifer RI/FS; will support program management critical to INEL operations and FFA/CO and DOE orders compliance.
	Completed interim remedial action for identified unexploded ordnance in OU-10-03; destroyed live ordnance under a removal action (OU 10-03).	Complete post interim action sampling for unexploded ordnance.	Will initiate RD/RA SOW and preliminary remedial design on RAD contaminated soils.
	$ 75,383	$ 107,530	$ 76,943
Subtotal, Idaho	$ 75,383	$ 107,530	$ 76,943
Nevada			
Nevada Test Site (NTS), NV	Continued program management activities including, developing planning, baseline, and NEPA documents; initiated installation of three to four ground water characterization wells and associated modelling activities; submitted work plan for underground test areas to regulators; completed the FFA; continued refurbishment of additional existing wells; continued treatability testing associated with the plutonium-contaminated soils sites; prepared assessment for and conducted clean closure of the Area 27 Explosive Ordnance Disposal (EOD) site and	Continue program management activities, including developing planning, baseline, and NEPA documents (especially site-wide Environmental Impact Statement (EIS)); initiate installation of three to four ground water characterization wells and associated modelling activities at the underground test area; continue refurbishment of additional existing wells; continue long-term hydrologic monitoring at eight off-site locations; conduct site characterization for plutonium-contaminated soils media operable unit; complete RCRA	Will continue program management activities, including developing planning documents and preparing the site-wide EIS; will continue installation of three to four ground water characterization wells and complete Phase I modeling and risk assessment for underground testing areas; will continue RCRA assessment activities; will continue long-term hydrologic monitoring activities at eight off-site locations, and complete preliminary risk assessments for several of these locations; will continue characterization of

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Nevada (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nevada Test Site (NTS), NV (Cont'd)	conducted RCRA assessments on remaining sites; continued ER site inventory program; purchased the Salmon Site and continued detailed site characterization activities (RI/FS) at the Salmon Test site in Mississippi; conducted ground water monitoring at eight off-site locations in five States; initiated work plan for Tonopah Test Range.	assessments on five WAGs; continue ER site inventory certification; continue detailed site characterization activities (RI/FS) at the Salmon Test site in Mississippi; complete work plan for Tonopah Test Range.	plutonium-contaminated soils sites and finalize work plan for these sites; will complete field verification of over 1600 sites as part of ER site inventory program; will complete site assessment activities at the Salmon Test Site in Mississippi.
	Conducted clean closure of the Area 27 ECO; continued with remediation of abandoned septic tanks and USTs at NTS; remediated surface release sites at Shoal Test Site and at Tonopah Test Site.	Complete closure of the U3fi injection well; close ten USTs; fence and/or post Small Boy plutonium plume.	Will conduct interim remedial actions on the Double Tracks plutonium site at the Nevada Test Site Soils Media O.U.; will remove 12 USTs at the RCRA Industrial Sites; will initiate interim removal actions on numerous small sites on the NTS; will remove fuel storage debris at Amchitka Island, Alaska; will remove debris at Salmon Site; will remove depleted uranium and oil tank at Tonopah Test Range; will conduct remedial actions at the RCRA Industrial Site's Area 6 ponds on the NTS and at the Central Nevada Test Area.
	$ 43,856	$ 30,151	$ 43,471
Subtotal, Nevada	$ 43,856	$ 30,151	$ 43,471

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge			
Oak Ridge Associated Universities (ORAU), TN	Continued RI activities at Freels Bend and South Campus.	Complete draft RI report for Freels Bend and South Campus.	Will complete final RI report for Freels Bend and South Campus.
	$ 1,464	$ 1,239	$ 1,700
Oak Ridge National Laboratory (ORNL), TN	All activities funded under the comparable Non-Defense Key Activity Summary for Environmental Restoration.	Complete RI/FS at WAG 7.	Will complete RI/FS for WAG 5; will prepare proposed plan for WAG 5. All other activities funded under the comparable Non-Defense Key Activity Summary (KAS) for environmental restoration.
	All remediation activities funded under the comparable Non-Defense Key Activity Summary for Environmental Restoration.	Continue Corrective Measures at WAG 1; complete the WAG 7 Pit 1 in-situ vitrification demonstration.	Will continue corrective measures at WAG 1; will design and initiate construction activities for WAG 1; will continue CERCLA removal action for WAG 5 seeps. All other remediation activities funded under comparable Non-Defense KAS for environmental restoration.
	$ 1,633	$ 13,016	$ 20,116
Oak Ridge Operations Office (ORO), TN	Provided for administrative and technical contracts, and litigation expenses needed to support the ORO ER Program; provided oversight to ensure compliance with FFA; implemented Oak Ridge Environmental Information System (OREIS) for integration of environmental data; provided contract management oversight to ER activities; consolidated contract management activities from other Oak Ridge projects. Additional activities provided under the Uranium Enrichment D&D fund.	Provide for administrative and technical contracts, and litigation expenses needed to support the ORO Environmental Restoration Program; provide oversight to ensure compliance with FFA; conduct other crosscutting efforts required to support growth of ORO activities at the various installations and sites; continue contract management oversight to ER activities; reimburse the Agency for Toxic Substances and Disease Registry (ATSDR); complete OREIS program management plan and receive headquarters approval. Additional	Will provide for administrative and technical contracts, and litigation expenses needed to support the ORO environmental restoration program; will provide oversight to ensure compliance with FFA; will continue contract management oversight and provide technical integration support to ER activities; will conduct other crosscutting efforts required to support growth of ORO activities at the various installations and sites; will implement OREIS program management plan. Additional activities funded under D&D fund section.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge Operations Office (ORO), TN (Cont'd)		activities funded under UE D&D fund section.	
	No remediation activities.	Conduct shipments of solidified pond sludge to an off-site commercial disposal facility. STIPULATED PENALTIES: Funding is included ($50K) for payment to the EPA for informal dispute resolution assessed in 1993.	Will continue shipments of solidified pond sludge to an off-site commercial disposal facility.
	$ 18,064	$ 16,748	$ 20,835
Oak Ridge Reservation (ORR), TN	Maintained administrative record and continued to support the community relations plan; completed near-shore sediment characterization from an off-site contaminated area; prepared RI/FS/EIS and developed supporting data for East Fork Poplar Creek (EFPC); initiated Phase II engineering EE/CA for Atomic City Auto Parts (ACAP). All other activities funded under the Uranium Enrichment D&D Fund.	Maintain administrative record and continue to support the community relations plan; conduct post-remedial action monitoring and surveillance and maintenance (S&M) of the long-term waste storage from an off-site contaminated area (CSX); initiate ACAP Phase II work plan development and field investigations; submit proposed plan to EPA/Tennessee Department of Environmental Conservation (TDEC) for approval; write ROD and submit to EPA/TDEC for review and obtain ROD for EFPC. All other activities funded under the Uranium Enrichment D&D Fund.	Will maintain administrative record and continue to support community relations plan; will continue S&M of an offsite contaminated area (CSX Railroad); will complete EFPC remedial assessment work plan; will continue comment resolution with regulators for Watts Bar RI report; will defer ACAP Phase II field investigations. All other activities funded under the Uranium Enrichment D&D fund.
	Completed removal action along CSX railroad spurline; initiated and completed Phase I remediation for ACAP.	No remediation activities.	Will initiate preparation of remedial design report and remediation for ACAP. All other activities funded under the Uranium Enrichment D&D fund.
	$ 9,759	$ 12,035	$ 14,921

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Paducah Gaseous Diffusion Plant, KY	Conducted initial treatment, storage, and disposal (TSD) maintenance and operations; pursued efforts for scrap metal for re-use and recycle; pursued treatment technology and studies for land disposal. All other Paducah activities are budgeted under the Uranium Enrichment D&D Fund appropriation account.	Using prior year carryover, continue treatment, storage and disposal maintenance and operations. All other Paducah activities are funded and described under the Uranium Enrichment D&D Fund appropriation account.	All activities funded under the Uranium Enrichment D&D fund.
	$ 9,165	$ 0	$ 0
Portsmouth Gaseous Diffusion Plant, OH	Continued initial TSD maintenance and operations; pursued treatment technology and studies for land disposal. All other activities funded under the Uranium Enrichment D&D Fund.	Using prior year carryover, continue treatment, storage and disposal maintenance and operations. All other Portsmouth activities are funded and described under the Uranium Enrichment D&D fund.	All activities funded under the Uranium Enrichment D&D Fund.
	$ 15,349	$ 0	$ 0
Y-12 Plant, TN	Continued sampling and monitoring of instrumented deep ground water monitoring wells for the Dense Non-Aqueous Phased Liquids (DNAPLs) investigation; completed RI/FS investigation of Chestnut Ridge OU2 (Filled Coal Ash Pond/U McCoy Branch); initiated RI field activities for Chestnut Ridge OU1 (Security Pits) and OU4 (Rodgers Quarry/L McCoy Branch) RI/FS; initiated Bear Creek OU1 RI field activities; completed RI/FS for Bear Creek Valley OU4 (Ground Water Integrator Unit); prepared RI/FS for Bear Creek OU2; conducted RI field activities for Bear Creek OU1; completed design study for mercury treatment plant; continued UEFPC OU1 RI Phase I and II field sampling and	Continue sampling and monitoring of instrumented deep ground water monitoring wells for the DNAPLs investigation; defer RI field activities for Chestnut Ridge OU1 (Security Pits); complete OU2 RI/FS Report and initiate Proposed Plan; complete OU4 (Rodgers Quarry/L McCoy Branch) RI/FS; complete RI field activities for Bear Creek OU1; complete RI/FS reports and initiate Proposed Plan and Remedial Design for Bear Creek Valley OU2 (SY-200 Yard and Spoil Areas) and OU4 (Ground Water Integrator Unit); continue UEFPC OU1 and OU2 RI field investigation activities; and defer completion of OU3 RI report; provide program management support.	No activity.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Y-12 Plant, TN (Cont'd)	Initiated OU3 RI field activities; conducted ANAP OU2 Proposed Plan and No Further Action ROD; conducted field activities at Interim Drum Yard and initiated design for Interim Drum Yard, and Dike Storage Tank; conducted AE design for the Rust Fuel Facility; completed draft FS-EIS for UEFPC; provided program management support.		
	Completed CAPCA Phase I Walk-in-Pits closure; began Reduction of Mercury in Plant Effluent (RMPE) Phase II remedial activities at UEFPC; conducted proposed plan and ROD for UEFPC; initiated final clean closure activities at USTs; continued site S&M.	Initiate phased construction of the mercury treatment plant at UEFPC; continue remedial actions at the UEFPC area (RMPE II); continue site S&M; complete proposed plan and ROD for UEFPC; complete final clean closure activities at USTs.	Will continue, at a reduced level of effort, activities associated with phased construction of the Mercury Treatment Facility and RMPE Project associated source collection; will continue operations at RMPE II area; will continue site S&M.
	$ 29,428	$ 24,821	$ 9,080
Subtotal, Oak Ridge	$ 84,862	$ 67,859	$ 66,652
Ohio			
Mound Plant, OH	Initiated RI fieldwork for the New Property (OU5). Initiated transfer of a 500 foot parcel of New Property to the City of Miamisburg. Initiated the Fire Fighting Training Area removal action; completed RI/FS workplan for OU2; initiated residential water investigation; continued environmental/ecological assessment; completed background soil investigation and hydrological studies; initiated surface water and sediment sampling (OU9); completed Phase I of Environmental Information System Development; completed the Remedial Investigation (RI) report, the Feasibility Study (FS)	Complete New Property (OU5) assessment fieldwork and initiate RI Report and FS/PP to determine additional parcels of land that can be transferred to the City of Miamisburg; complete assessment field work for selected operational areas of OU5; finalize the Record of Decision (ROD) for OU1; continue residential, regional soils, and surface water/sediment investigations (OU9); continue development of environmental information system. Continue community relations activities and other program management efforts.	Will complete the RI Report for the New Property (OU5); will complete the FS/PP and initiate the ROD for the New Property to determine additional parcels of land available for transfer to the City of Miamisburg; will complete residential water investigation; will complete ground water sampling and regional soils investigation (OU9); will complete the development of environmental information system; will continue community relations activities and other program management efforts.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Ohio (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Mound Plant, OH (Cont'd)	and Proposed Plan (PP) for Area B, ground water (OU1); continued community relations activities and other program management activities.		
	Initiated the Area 7 tank removal action. Completed removal of B Building solvent shed and initiate operations of a soil vapor extraction system for the B Building removal action. Finalized the Engineering Evaluation/Cost Analysis (EE/CA) and initiated removal action design for the 1.5 mile portion of the Miami-Erie Canal (OU4).	Complete the Fire Fighting Training Area removal action. Complete the Area 7 tank removal action. Complete the design for the Miami-Erie Canal removal action; initiate remedial design for OU1.	Will initiate implementation of OU1 ROD. Will initiate removal action for the Miami-Erie Canal.
	$ 13,552	$ 15,401	$ 23,727
Fernald Environmental Management Project (FEMP), OH	Continued RI/FS activities as agreed to in the September 1991, Consent Agreement as amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), including completion of the RI report/Baseline Risk Assessment reports for OU1, OU2, and OU5 and FS reports for OU1 and OU2; completed draft ROD for OU4; issued interim ROD for OU3; continued program support activities; continued essential monitoring of the surrounding environment including soil, air and ground water sampling; continued monitoring compliance activities; continued conduct of laboratory analysis; continued essential plant training efforts; continued essential comprehensive quality assurance efforts; continued health and safety programs; accelerated equipment purchases and subcontract placement for	Continue RI/FS activities as agreed to in the September 1991, Consent Agreement as amended under CERCLA, including completion of the FS report/proposed plan for OU5 and the RI/FS PP for OU3; initiate preparation of the OU3 draft ROD; complete draft RODs for OU1, OU2 and OU5; issue final RODs for OU1, OU2, and OU4; complete remedial design work plans for OU1, OU2, and OU4; initiate remedial action work plans for OU1, OU2, and OU4; initiate remedial design work plan for OU5; provide for essential program support activities but defer some lower priority activities until FY 1996; continue monitoring of the impact of past operations on the surrounding environment including soil, air and ground water sampling; continue monitoring compliance activities; continue conduct of laboratory analysis; continue essential plant	Will continue RI/FS activities as agreed to in the September 1991, Consent Agreement as amended under CERCLA, including continued preparation of the OU3 draft ROD; will issue final ROD for OU5; will complete remedial action work plans for OU1, OU2, and OU4; will initiate remedial actions for OU1, OU2 and OU4; will initiate preparation of comprehensive site wide RI/projected residual risk assessment work plan addendum; will complete remedial design work plan for OU5; will initiate remedial action work plan for OU5; will provide for essential program support activities; will continue monitoring of the impact of past operations of the surrounding environment including soil, air and ground water sampling; will continue monitoring compliance activities; will continue conduct of laboratory analysis; will continue essential

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Ohio (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Fernald Environmental Management Project (FEMP), OH (Cont'd)	OU4 pilot plant.	training efforts; continue essential comprehensive quality assurance efforts; continue health and safety programs. STIPULATED PEMALTIES: Funding is included ($50K) for payment to the EPA for informal dispute resolution assessed in FY 1993.	comprehensive quality assurance efforts; will continue health and safety programs.
	Continued hazards abatement activities; continued preliminary engineering for OU3; initiated detailed engineering for OU5; completed preliminary design of the Engineered Waste Management Facility (EWMF); continued six and initiated five new removal actions identified in the Consent Decree; completed five removal actions; initiated safe shutdown activities; continued the Minimum Additive Waste Stabilization (MAWs) project; continued essential activities necessary to bring the facility into compliance with applicable air, water and solid waste regulatory requirements; continued to perform required RCRA closures, treat/dispose of 2,000 drum equivalents of RCRA/mixed waste; processed and disposed of 45,000 drum equivalents of low-level waste (LLW); maintained waste storage facilities/inspections per the Consent Decree; continued off-site disposal of hazardous waste through commercial sources; continued repackaging, labeling, and sorting of the backlog of LLW; continued upgrade projects, including the Plant 1 waste storage pad and Plant 8 waste processing projects; continued decontamination of scrap metal; initiated a technology demonstration	Initiate R/A activities for all OU2 subunits; continue remedial action and remedial design activities for OU1; continue to perform ongoing maintenance and inspection activities for active and inactive Flyash Pile RA for OU2; continue hazards abatement activities; complete detailed design for OU4; continue detailed engineering for OU5; complete detailed design of the Engineered Treatment, Packaging, and Staging Facility; continue six and initiate two new removal actions identified in the Consent Agreement; complete four removal actions, continue safe shutdown activities for OU3; continue the OU4 pilot plant project; continue essential activities necessary to bring the facility into compliance with applicable air, water, and solid waste regulatory requirements; continue to perform required RCRA closures, treat/dispose of 47,000 drum equivalents of LLW; process and dispose of 2,000 drum equivalents of RCRA/mixed waste; continue off-site disposal of hazardous waste through commercial sources; maintain waste storage facilities inspections per the Consent Agreement; continue repackaging, labeling, and sorting of the backlog of LLW; complete the Plant 1 waste storage	Will continue to perform ongoing maintenance and inspection activities for active and inactive Flyash Pile RA for OU2 and initiate remedial design for OU2; will continue remedial action and remedial design activities for OU1; will continue hazards abatement activities; will initiate construction for the removal and treatment of OU4 silo contents; will continue construction of the OU4 treatment facility, waste retrieval system, mechanical/piping/arc protection electrical systems, and the temporary staging and storage facility; will initiate contaminated soil removal and interim storage; will initiate construction of the OU5 Western Sand Lens project; will initiate the operation of the South Plume Recovery Wells and the Perched Water System; will initiate the construction of the Engineered Treatment, Packaging, and Staging Facility; will initiate shipment and disposal of dried waste for Waste Drying Pilot Study; will complete two and continue four removal actions; will continue safe shutdown activities; will continue essential activities necessary to bring the facility into compliance with applicable air, water, and solid waste

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Ohio (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Fernald Environmental Management Project (FEMP), OH (Cont'd)	for remediation of buildings and surrounding areas at FEMP; completed construction and startup of the Advanced Wastewater Treatment Facility (AWTF); performed preliminary work for waste Pit 6 remedial action and started waste Pit 6 treatability study; continued detailed design for OU4; initiated detail design of engineered treatment, packaging, and staging facility; provided support for the establishment of the Ohio Operations Office; initiated remedial action and remedial design activities in OU1; continued to perform ongoing maintenance and inspection activities for active and inactive Flyash Pile RA for OU2.	pad upgrade project; continue decontamination of scrap metal; continue a technology demonstration for remediation of buildings and surrounding areas at FEMP; continue operation of the AWTF; initiate construction of additional interim advanced wastewater treatment units; continue engineering for OU3; continue waste pit 6 treatability study; continue support for the establishment of the Ohio Operations Office; provide required partial funding for settlement of the Day case; provide funding for work force restructuring activities.	regulatory requirements; will process and dispose of 40,000 drum equivalents of LLW; will process and dispose of 2,000 drum equivalents of RCRA/mixed waste; will maintain waste storage facilities; will maintain waste storage facilities/inspections per the Consent Decree; will continue off-site disposal of hazardous waste through commercial sources; will continue decontamination of scrap metal; will continue operations of the AWTF; will complete construction and initiate operations of additional interim Advanced Wastewater Treatment units; will continue engineering for OU3; will continue detailed engineering for OU5; will complete required funding for settlement of the Day Case Lawsuit; will provide funding for work force restructuring activities.
	$ 194,233	$ 184,302	$ 189,478
Subtotal, Ohio	$ 207,785	$ 199,703	$ 213,205

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Richland			
Hanford Site, WA	1100 AREA Completed remedial design for the 1100 Area; issued remedial action work plan. 100 AREA Initiated preparation of focused FS reports and proposed plans for 11 100 Area OUs (100-BC-1, BC-5, DR-1, HR-1, FR-3, NR-2, KR-4, HR-3, KR-1, FR-1, BC-2); submitted 2 of these (100-HR-1 and DR-1) to the regulators; completed treatability tests for 3 OUs (100-BC-1, HR-1, HR-3) and initiated new pilot scale studies at 100-DR-1 (soil washing) and HR-3 (ground water treatment); completed treatability test at 100-BC-2 burial ground vitrification and grouting tests to support remediation; issued work plan to the regulators for 1 OU (100-DR-2); continued 100 Area-wide activities, i.e., ecological studies and characterization activities as recommended in the Columbia River Impacts Evaluation Plan; continued quarterly sampling of 150 ground water wells; issued 6 OU LFI Reports and QRAs to the regulators (100-HR-3, KR-4, KR-1, and FR-3).	1100 AREA Perform remediation of the 1100 Area per the Record of Decision. 100 AREA Issue focused FS reports and proposed plans for 4 OUs (100-DR-2, KR-1, FR-1, BC-2); complete proposed plans for 8 OUs (100-BC-1, BC-5, DR-1, HR-1, HR-3, FR-3, KR-4, HR-2); continue 100 Area-wide activities, i.e., ecological studies and characterization activities as recommended in the Columbia River Impacts Evaluation Plan; continue sampling of 100 Area ground water wells; initiate 3 to 5 additional treatability studies; continue pilot-scale pump and treat operations at 100-HR-3; and soil washing treatability tests at 100-DR-1; prepare workplans for 100-KR-2, NR-1, and NR-2; issue LFI/QRA report to regulators for 100-FR-1 and NR-1.	1100 AREA No activity. 100 AREA Will complete proposed plans for three operable units (100-DR-2, NR-1, NR-2); will continue sampling and analysis of 100 Area ground water; will continue pilot scale pump and treat operations at operable unit 100-HR-3; will continue 100 Area-wide ecological risk assessments and treatability tests; will reach an IROD for 100-BC-5 operable unit.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site, WA (Cont'd)	Continued expedited response action (ERA) activities at N Springs.	Initiate remedial design activities for 3 OUs (100-BC-1, DR-1, HR-1); install ground water pump and treat system and ground water cut-off wall for N Springs ERA (100-NR-1); begin remediation of selected waste sites in 1 operable unit (BC-1); procure remediation equipment.	Will begin or continue remediation of selected waste sites in 1 operable unit (100-BC-1); will begin or continue remedial design and remedial action planning for selected waste sites in 4 operable units (100-BC-1, DR-1, HR-1, HR-2); will continue procurement of remediation equipment; will continue ground water pump and treat operations for the N Springs ERA.
	200 AREA	200 AREA	200 AREA
	Submitted constructibility report for the Hanford prototype barrier and complete prototype barrier construction at 1 OU (200-BP-1); prepared work plan for 1 OU (200-UP-1); submitted treatability test plan for 3 OUs (200-BP-5, ZP-1, UP-1); submitted proposed plans for 1 OU (200-ZP-1); initiated assessment activities at 2 OUs (200-UP-1 and BP-5); continued assessment at 1 OU (200-UP-2); initiated pump and treat treatability testing for 3 OUs (200-UP-1, ZP-1, and BP-5); submitted integrated 200-BP-11 and 216-B-3 Pond work/closure plan.	Initiate intrusive work for 1 OU (200-BP-1); continue assessment activities at 5 OUs (200-BP-5, UP-1, BP-11, ZP-1 and UP-2); continue pump and treat treatability testing at 200-UP-1; complete pump and treat treatability testing at 2 OUs (200-BP-5 and ZP-1); submit proposed plan for 1 OU (200-UP-1); initiate preparation of focused FS for 1 OU (200-UP-2).	Will issue an IRM proposed plan and focused feasibility study for 200-UP-2; issue a ground water report and an Iodine-129 report for the 200 Common Area.
	Continued carbon tetrachloride ERAs at 1 OU (200-ZP-2); completed ERDF conceptual design and initiated definitive design; completed construction activities for the W-025 trench disposal facility; completed performance and safety assessments; completed ERDF regulatory package and submitted to regulators for review.	Continue carbon tetrachloride ERAs at 1 OU (200-ZP-2); initiate pump and treat operations, if proven effective, as remediation at 2 OUs (200-BP-5 and ZP-1); complete construction of the W-025A trench disposal facility; start trench construction of the ERDF; continue ERDF definitive design, initiate ERDF infrastructure construction activities, i.e. roads, operations buildings, electrical access, and have W-025 Trench facility ready for operations; issue ERDF ROD with the regulators.	Will remove waste generated from shutdown of the pump and treat systems at 200-BP-5, 200-UP-1, and 200-ZP-1; will continue carbon tetrachloride ERAs at 1 OU (200-ZP-2); will continue construction activities in order to make ERDF operational on 9/30/96, meeting Tri-Party Agreement (TPA) Milestone M-70-00; will complete regulatory documentation; will complete definitive design early FY 1996; and will conduct operational readiness activities; will construct a barrier at 200-BP-1 and monitor existing barrier.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site, WA (Cont'd)	300 AREA	300 AREA	300 AREA
	Continued RI/FS and issued RI Phase 2 report for 1 OU (300-FF-1); issued RI Phase 2 treatability report, FS Phase 3 report, and proposed plan for 1 OU (300-FF-1).	Submit proposed plan for 300-FF-1; submit 300-FF-1 FS to regulators; submit 300-FF-1 vendor test report; issue ROD for 300-FF-1; approve 300-FF-2 LFI work plan; perform non-intrusive investigations at 300-FF-2; drill 2 monitoring wells and perform ground water monitoring at 300-FF-2; develop treatability test plans for 300-FF-2 burial grounds; complete RI/FS Phase III document and proposed plan for 300-FF-5; continue ground water monitoring for 300-FF-5.	Will continue characterization activities at 300-FF-2.
	No remediation activity. 618-11 burial ground activity deferred to 300-FF-2 remediation.	Initiate 300-FF-1 remedial design work.	Will complete 300-FF-1 remedial design; will initiate 300-FF-1 remediation.
	SST	SST	SST
	Performed work plans and safety assessments for 200-PO-3.	No activity.	No activity.
	RADIATION AREA REMEDIAL ACTION (RARA)/UST	RARA/UST	RARA/UST
	Continued decontamination/stabilization of 6 outdoor areas; continued herbicide application; responded to radiation problem reports, as required; initiated and completed removal of 5 USTs, which completed the "orphan" tank removal program in accordance with State of Washington regulations; disposed of any contaminated soils/debris in approved facilities; the UST removal program was completed one year in advance of planning.	Continue ground and aerial application of herbicide to control vegetative growth on active burial grounds; continue decontamination/stabilization of 14 contaminated sites by removing top soils and revegetating to control dust and soil erosion; respond to radiation problem reports, as required.	Will continue ground and aerial application of herbicide to control vegetative growth on inactive waste sites; will continue decontamination/stabilization of 10 contaminated sites by removing top soils and revegetating to control dust and soil erosion; will respond to radiation problem reports, as required.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site, WA (Cont'd)	RCRA EFFORTS	RCRA EFFORTS	RCRA EFFORTS
	Performed initial reviews of Notice of Deficiency (NOD) requirements for NRDWL, 100-D Ponds and Hexone Tanks; performed revision to the 216-B-3 pond system closure plan; initiated preparation of the closure plan for the 216-U-12 crib (M-20-37); completed the 300 Area Process Trenches closure plan and transmitted to EPA and Ecology per TPA milestone M-20-32; continued closure activities for the NRDWL and B Pond; performed limited characterization of the 183-H solar basins.	Complete and submit 216-U-12 crib closure/post closure plan to regulators; complete and submit 216-A-29 ditch and 216-B-63 trench closure/post closure plans to the regulators.	No assessment activity.
	Completed construction of 216-B-3 system by-pass; completed interim stabilization of the B-Pond.	Complete structure decontamination activities for 183-H Solar Basins.	Will complete demolition of the 183-H facility.
	OTHER ACTIVITIES	OTHER ACTIVITIES	OTHER ACTIVITIES
	Continued overall program management and administration activities; developed various Major System Acquisition (MSA) management systems and plans; continued maintenance and operations of administrative records; prepared, held and document results of public meetings (4 per year minimum); continued development of Hanford Environmental Impact Statement (HEIS) database; implemented the Quality Assurance (QA) programs; updated the QA Report; continued QA training; supported miscellaneous activities such as independent cost estimating, staff training, grants to the U.S. Geological Survey, direct support for EPA network access cost to PNL database; monitored access cost to PNL database; monitored and analyzed the performance of the	Continue overall program management and administration activities; continue development of various MSA management systems and plans; continue maintenance and operations of administrative records; prepare, hold and document results of public meetings (4 per year minimum); continue development of HEIS database; make equipment purchases to support RI/FS activities; continue QA programs; update the QA Report; continue QA training; continue to support miscellaneous activities such as independent cost estimating, staff training, grants to the U.S. Geological Survey, direct support for EPA network access cost to PNL database; continue to monitor and analyze the performance of the technology prototype barrier being constructed; continue drafting	Will continue overall program management and administration activities; will continue development of various MSA management systems and plans; will continue maintenance and operations of administrative records; will prepare, hold and document results of public meetings (4 per year minimum); will continue support of HEIS database and will procure general equipment to support RI/FS activities and training; will continue to support miscellaneous activities such as independent cost estimating, grants, and compliance oversight; will maintain the HRA-EIS; will continue to interface with HASM to ensure effective utilization of on-site laboratories; will continue to support HEIS/GIS; will continue to support general

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site, WA (Cont'd)	technology prototype barrier being constructed; continued drafting the Hanford remedial action (HRA)-EIS; continued barrier development and monitoring; continued technology adaptation; continued partial renovation/modernization of the 325 laboratory; began radiochemistry laboratory upgrade; continued to interface with HASM to ensure effective utilization of on-site laboratories, to contract for off-site laboratories to perform CLP analyses and to enhance CLP sample database tracking; continued HASM support for oversight of laboratory facility upgrades; continued facility, system and equipment upgrades; as part of LIMS, support HEIS/GIS computer upgrades; provided administration, management and infrastructure for field screening, characterization and drilling-related upgrade activities; continued general investigation studies; drilled five additional RCRA compliant wells in support of site-wide remediation standards; continued laboratory characterization of fine structured soils for use in constructing multilayer closure covers; continued RI/FS baseline activities; limited training, records management, equipment calibration, procedure preparation, limited health physics procedure preparation support, historical scoping studies; continued investigation of future suspect waste sites; continued advanced planning and preparation of ERA proposals; continued to support the purgewater and 222-S maintenance assessments.	the HRA-EIS; continue barrier development and monitoring; continue technology adaptation; continue renovation/modernization of the 325 laboratory; continue radiochemistry laboratory upgrade; continue to interface with HASM to ensure effective utilization of on-site laboratories, to contract for off-site laboratories to perform CLP analyses and to enhance CLP sample database tracking; continue HASM support for oversight of laboratory facility upgrades; continue facility, system and equipment upgrades; continue to support HEIS/GIS computer upgrades; continue to provide administration, management and infrastructure for field screening, characterization and drilling related upgrade activities; continue general investigation studies; continue laboratory characterization of fine structured soils for use in constructing multilayer closure covers; update RI/FS baseline; continue training, records management, equipment calibration, procedure preparation, health physics procedure preparation support, historical scoping studies; continue investigation of future suspect waste sites; continue advanced planning and preparation of ERA proposals; continue to support the purgewater and 222-S maintenance assessments.	investigation studies; will support historical scoping studies; will continue investigation of future suspect waste sites; will continue to support the purgewater assessments; and will continue to support the Hanford Prototype Barrier and field demonstrations of new technologies focusing on D&D, soil remediation, and ground water.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site, WA (Cont'd)	$ 152,480	$ 166,142	$ 120,032
Subtotal, Richland	$ 152,480	$ 166,142	$ 120,032
Rocky Flats			
Rocky Flats Plant (RFP), CO	Continued program management and support activities; continued site-wide activities including community relations, public participation, EIS activities, treatability studies, risk assessment, and geological studies to reduce site characterization costs; conducted OU specific accelerated removal actions; completed assessment of soil and ground water contamination; developed and maintained the RF ER database system (RFEDS) to facilitate storage of environmental analytical data and use of Geographic Information System (GIS); continue feasibility study and ecological assessment at 881 Hillside (OU1) resulting from solvent spills, oil leaks, drum storage and chemical burial; continue assessment and feasibility studys resulting from spray irrigation, chemical burial and drum storage at OU2; continued assessments for the Off-Site Areas (OU3) soil and surface water reservoir contamination resulting from wind-blown radioactively-contaminated soils and spills to creeks; continued assessment of soil and ground water contamination resulting from leakage of wastes from the Solar Evaporation Ponds (OU4); continued assessment of soil and ground water contamination; began feasibility study at Woman Creek (OU5) and Walnut Creek (OU6) resulting from incinerator and landfill activities, retention ponds, ash pits, sludge dispersal,	Continue program management and support activities; continue site-wide activities including community relations, public participation, EIS activities, treatability studies, risk assessment, and geological studies to reduce site characterization costs; maintain RFEDS and GIS system; continue OU specific accelerated removal actions; complete feasibility study and ecological assessment; initiate RAP at 881 Hillside (OU1) resulting from solvent spills, oil leaks, drum storage, and chemical burial; continue the OU2 subsurface investigation project to evaluate in-situ ground water decontamination techniques; continue assessment and feasibility study of OU2 soil, bedrock and ground water contamination and ecological assessment resulting from spray irrigation, chemical burial and drum storage; finalize assessments and feasibility RAP for the Off-Site Areas (OU3) soil and surface water reservoir contamination resulting from wind-blown radioactively-contaminated soils and spills to creeks; continue assessment and feasibility study of soil and ground water contamination resulting from the leakage of wastes from the Solar Evaporation Ponds (OU4); continue assessment and feasibility study of soil and ground water contamination at Woman Creek (OU5) and Walnut Creek (OU6) resulting from incinerator and	Will continue program management and support activities; will continue site-wide activites including community relations and public participation; will maintain limited RDEDS and GIS System; will complete OU specific accelerated removal actions; will complete RAP (OU1); will complete assessment and Feasibility Study and begin preparation of the RAP for 903 Pad, Mound, and East Trenches (OU2) resulting from spray irrigation, chemical burial and drum storage; will complete assessment and Feasibility Study for the Off-Site Areas (OU3) soil and surface water reservoir contamination resulting from wind-blown radioactively-contaminated soils and spills to creeks; will complete assessment and feasibility study of soil and ground water contamination resulting from the leakage of wastes from the Solar Evaporation Ponds (OU4); will maintain long-term shutdown; will complete assessments and FS and begin preparation of ROD for Woman Creek (OU5) and Walnut Creek (OU6) resulting from incinerator and landfill activities, retention ponds, ash pits, sludge disperal, waste burial, and spray irrigation; will continue limited intrusive field work and laboratory analysis, the Industrial Area which comprises 700 Area (OU8), Original Process Wastelines (OU9), Outside Closures (OU10), the 400/800 Area

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Rocky Flats Plant (RFP), CO (Cont'd)	waste burial, and spray irrigation; continue assessment of potential soil and ground water contamination and begin preliminary design of the Interim Measure/Interim Remedial Action (IM/IRA) for leachate collection resulting from the Present Landfill (OU7) operation; continued assessment, using non-intrusive methods, of potential soil and ground water contamination at the 700 Area (OU8), the original Process Waste Lines (OU9), the West Spray Field (OU11), the 100 Area (OU13), and the Radioactive Sites (OU14); began assessment of the concentration and extent of contamination at the other Outside Closures (OU10) and the 400/800 Area (OU12); continued assessment of the concentration and extent of contamination at the Inside Building Closures (OU15); continue operation and maintenance of field assessment equipment decontamination facilities; completed OU16 ROD.	landfill activities, retention ponds, ash pits, sludge dispersal, waste burial, and spray irrigation; complete assessment of potential soil and ground water contamination resulting from the Present Landfill (OU7); continue assessment using non-intrusive methods, of potential and ground water contamination at the 700 Area (OU8), the original Process Waste Lines (OU9), the 100 Area (OU13), and the Radioactive Sites (OU14); complete "No Further Action" justification for the West Spray Field (OU11); continue assessment of the concentration and extent of contamination at 400/800 Area (OU12) Other Outside Closures by initiating intrusive field work (OU10); complete assessment of the concentration and extent of contamination at the Inside Building Closures (OU15); continue operation and maintenance of field assessment equipment decontamination facilities.	(OU12), the 100 Area (OU13), and radioactive site (OU14); will complete "No Further Action" RODs for West Spray Field Area (OU11) and Inside Building Closures (OU15); will continue operation and maintenance of field assessment equipment decontamination facilities.
	initiated and obtained agency approval for the Industrial Area interim remedial action; operated the treatment system for interim remedial action at the 881 Hillside (OU1) to treat contaminated ground water; initiated construction of soil vapor extraction (SVE) pilot; operated the treatment system as part of the interim remedial action for collection and treatment of contaminated water from surface seeps at the 903 Pad, Mound and East Trenches (OU2); completed accelerated sludge removal project to remove sludge and place tank storage on 750 Pad; continued RCRA compliance activities	Design, construct, and implement the Industrial Area Interim Remedial Action to stabilize conditions and accelerate cleanup within the Industrial Area; operate the treatment system for interim remedial action at the 881 Hillside (OU1) to treat contaminated ground water; continue to operate SVE pilot; operate the treatment system as part of the interim remedial action for collection and treatment of contaminated water from surface seeps at the 903 Pad, Mound and East Trenches (OU2); continue operation of the OU2 subsurface to remove volatile organic compounds (VOCs) from the soil;	Will continue operating treatment systems for the Interim Remedial Action to treat contaminated ground water of the 881 Hillside (OU1) resulting from solvent spills, oil leaks, drum storage, and chemical burial; will initiate accelerated action for containment, removal, and disposal of contaminated sources from the 903 Pad and East Trenches; will prepare field test report and continue to operate Sue Pilot; will continue the operation of the OU2 subsurface interim Remedial Action to remove VOCs from the soil; will continue operating Interim Remedial Action for the collection and

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Rocky Flats Plant (RFP), CO (Cont'd)	for storage of pondcrete, closure activities for Solar Evaporation Ponds (OU4) sludge contaminated with mixed waste, and pond water management (transfer pond water to Building 374 treatment facility); began operation of the OU2 subsurface interim Remedial Action to remove VOCs from the soil; continued operation of the OU4 interim remedial action Interceptor Trench System and treatment of captured ground water; began construction of decontamination waste water pre-treatment system; began design, construction, and operation of various units of Waste Handling/Treatment Facilities for ER site-wide waste; continued the initiative to further safeguard drinking water supplies for communities in the vicinity of Rocky Flats (Option B-Off-Site Water Management and Option J-On-Site Water Management) including activities to procure a Broomfield water treatment plant, install a raw water pipeline, construction of an off-site Woman Creek Reservoir, and various on-site water management projects; reorganized to provide decentralization of project responsibility and accountability to the lowest practical field element; the quality assurance team (QAT) incorporated senior management comments into the action plans and provided ongoing support for the resolution of issues needed for Interagency Agreement (IAG) negotiations; conducted negotiations with EPA/Colorado Department of Health (CDH) for the Rocky Flats Cleanup Agreement; completed tolling agreement with EPA/CDH; began selected Pondwater IM/IRA construction; completed final draft of the pond water IM/IRA and	continue RCRA compliance activities for storage of pondcrete; begin design efforts to process sludge and pondcrete for placement under the engineered barrier; maintain 910 Pad in standby; removal and solidification of Solar Evaporation Ponds (OU4) sludge contaminated with mixed waste; continue operation of the OU4 interim remedial action Interceptor Trench System and treatment of captured ground water; continue construction of decontamination waste water pre-treatment system; design and construct sitewide treatability facility to treat sitewide waste water; install and operate the leachate collection system IM/IRA for the present landfill OU7; initiate remediation at the Inside Building Closures (OU15); continue design, construction, and operation of various units of the Waste Handling/Treatment Facilities for ER site-wide waste; complete the initiative to further safeguard drinking water supplies for communities in the vicinity of Rocky Flats (Option B-Off-site Water Management) including activities to procure a Broomfield water treatment plant, install a raw water pipeline, and construction of an off-site Woman Creek Reservoir and continue various on-site water management projects; the QAT will provide ongoing assistance for the resolution of issues related to the IAG and BE activities; complete Pond Water IM/IRA construction; complete Pond Water PM/IRA decision document.	treatment of contaminated ground water from surface seeps; will continue processing of sludge for disposal under the RCRA cap; will continue construction of the RCRA cap of the Solar Evaporation Ponds (OU4) and installation of performance monitoring equipment; continue operation of the OU4 interceptor Trench system; will continue construction and operation of various units of the Waste Handling/ Treatment facilities for ER site-wide waste; will continue on site water management projects; will continue operation of sitewide waste water treatability facility and decontamination waste water pre-treatment system; provide QAT assistance for the resolution of issues related to the IAG and ER activities.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Rocky Flats Plant (RFP), CO (Cont'd)	delivered to regulatory agencies.		
	$ 140,062	$ 128,834	$ 135,112
Subtotal, Rocky Flats	$ 140,062	$ 128,834	$ 135,112
Oakland			
Lawrence Livermore National Laboratory (LLNL), CA	MAIN SITE	MAIN SITE	MAIN SITE
	Continued program management activities, such as site regulatory compliance and reporting, project management, strategic planning, regulatory interface, support for audit efforts, project reporting, implementation of project management and control system, and all other management efforts associated with the support of the Environmental Restoration Program at LLNL.	Continue program management activities associated with site regulatory compliance and reporting, project management, strategic planning, regulatory interface, support for audit efforts, maintenance of project management, control and tracking systems, and all other management efforts associated with the support of the Environmental Restoration Program at LLNL.	Will continue site management and support management activities such as funding support management personnel costs, budget activities, procurement, performance measurement reporting, office equipment and property, and all audits.
	Continued operation of Treatment Facilities (TF) A, B, and F to treat contaminated soil and ground water to maintain control of source and plume at all areas of LLNL; revised priority of work at LLNL Main Site and renegotiated Federal Facility Agreement Schedule to accommodate regulatory and stakeholder interest in western plume margin capture. Activities to accomplish this were: prepared and submitted final RD report 3 and drafted and finalized activities associated with submission of other RD reports; completed design and construction and initiated operation of treatment facilities C and D; completed treatability study at	Continue operation of TF A, B, C, D, and F to treat contaminated soil and ground water to maintain control of on-site high maximum contaminant level source areas and off-site plume migration toward the City of Livermore; continue installation of remaining planned extraction locations and associated piping and piezometers to complete treatment facility operations at design specifications and meet requirements of RAIP and ROD; begin construction of northern pipelines for TFA and TFB to add extraction clusters north of these sites to treat larger volumes of contaminated water in an effort to focus on preventing further	Will maintain commitments agreed to in the ROD and RAIP by continuing to operate all completed Treatment Facilities and Bldg. 518 vapor extraction unit. This constitutes normal operation and maintenance of applicable air strippers and UV/H2O2 or ion exchange units, as well as technical support, and chemical supplies; well and piezometer installation, sample collection and analysis, and hydraulic testing; will continue data collection and interpretation for compliance monitoring and reporting, management of data and reports, and to optimize remediation and capture of contaminated

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Livermore National Laboratory (LLNL), CA (Cont'd)	Trailer 5475; installed planned extraction locations and associated piping and piezometers to complete TF operations at design specifications and meet requirements of Remedial Action Implementation Plan (RAIP) and ROD; completed detailed study area and arroyo pipeline installation associated with TFA; continued source area efforts by completing closure of Building 612-3 area and continued monitoring at Building 292 with approval of report from regulatory agencies; maintained design and decision support activities to reduce uncertainty for remediation time and to provide basis for quantitative comparisons; continued TF compliance monitoring and reporting.	offsite western migration; prepare and submit the final RD 5 and 6 reports; initiate design and start construction of TF G-1; continue source investigations focused on continued characterization/remediation work around Buildings 331 and 419; design, construct and initiate operation of vapor extraction system at Building 518; continue monitoring of volatile organic compound (VOC) and tritium at Building 292 area; maintain design and decision support activities to reduce uncertainty for remediation time and to provide basis for quantitative comparisons at all operating treatment facilities; continue required TF environmental compliance and reporting; and submit draft compliance monitoring plan to agencies.	plume; construction, activation, and operation of TFG-1; will support Title I design for arroyo pipeline extension and associated extraction wells and soil sample analysis; will begin Title I design and purchases equipment for Trailer 5475 treatment facility; will begin construction of TFC North Pipeline; will issue the compliance monitoring plan and finalize the draft contingency plan for acceptance and approval by regulators; and will maintain administrative records and stakeholder involvement on all site activities.
	SITE 300	SITE 300	SITE 300
	Continued program management activities associated with the Environmental Restoration Program at LLNL Site 300, i.e., strategic planning, financial management, site and department support, project management, support for audit efforts, etc. Federal Facility Agreement Schedule renegotiated and redefined operable units (OUs) submitted for final Site 300 Site-Wide Remedial Investigation (SWRI); prepared characterization plans for data gaps at Site 300; and prepared FS reports for submittal of two draft and one final FS for designated OUs; OUs are as follows: General Services Area (GSA) (OU1), Building 834 Area (OU2), Landfill Pit 6 Area (OU3), HE Process Area (OU4), Building 850/854	Continue program management associated with the Environmental Restoration Program at LLNL Site 300, i.e., strategic planning, financial management, site and department support, support for audit efforts, project, cost and schedule management, tracking, and reporting; prepare final FS for OU1, OU3 and OU5; prepare proposed plans for implementation of the selected remedial action at OU2 and OU3; prepare and submit RODs for OU1.	Will continue site management and support management activities in support of environmental restoration efforts at the LLNL Site 300 such as funding support management personnel costs, budget activities, procurement, performance measurement reporting, office equipment and property, and all audits; will support monitoring activities required at areas on-site that are not covered under specific operable units until final site-wide ROD is issued; will prepare and submit proposed plan and draft ROD to regulators for OU1; will finalize the ROD after regulatory approval; will prepare and submit the final RAIP for final removal action for OU2; will complete proposed plan and submit final

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Lawrence Livermore National Laboratory (LLNL), CA (Cont'd)	Complex and Pits 3 and 5 (OU5), and Building 832 Canyon/Building 833 (OU6).		ROD to regulators for OU3; will prepare and submit draft and final FS and proposed plan for OU4; will prepare and submit final FS and proposed plan for Bldg 850/Pits 3&5 in OU5; will complete additional characterization work outlined in Bldg 854 Area Characterization Plan and remedial investigation for OU5, will begin remedial invetigations on Sandia Test Site and Building 812 areas of OU5; will prepare and submit FS for OU6; and will prepare and submit (applicable monthly) quarterly and annual operating reports, quarterly ground water sampling and analysis and monthly analytical reports for all OUs.
	Initiated minimal work for HE Burn Pit Closure in compliance with RCRA; continued characterization and remediation activities for leaking USTs as identified by ORAD; and continued Central and Eastern General Service Area (GSA) removal actions;	Continue work toward HE Burn Pit closure in compliance with RCRA requirements; continue characterizaton associated with leaking USTs as identified by ORAD, if necessary; continue Central and Eastern GSA removal action until implementation of final action after ROD.	Will finalize HE Burn Pit Closure Plan with regulators; will prepare request for procurement for closure construction in compliance with RCRA requirements; will continue to support maintenance and operation costs for Central and Eastern GSA ground water interim treatment facilities for mass removal at source areas until issuance of the RAIP and minimal operation and maintenance costs for Bldg. 834 treatment facility until implementation of final ROD when remedial alternative is selected.
	$ 29,204	$ 26,000	$ 25,500
Oakland Operations Office (OAK), CA	Continued OAK contractual support requirements such as preparation of baselines, program plans, management plans, project tracking systems, and various document reviews.	Maintain ability for contractual support to assist OAK on baselines, program plans, management plans, project tracking systems, and reviews of other EM-required material.	Will continue contractual support services to assist OAK staff on baselines, program plans, management plans, project tracking systems, and reviews of other EM-required material.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland Operations Office (OAK), CA (Cont'd)	$ 560	$ 822	$ 175
Subtotal, Oakland	$ 29,764	$ 26,822	$ 25,675
Savannah River			
Savannah River Site (SRS), SC	Continued program support activities; continued management of closed waste sites; provided technical support to environmental restoration efforts; continued assessment activities at SRL and TNX basins, coal pile runoff and ash basins, acid/caustic basins, reactor basins, basin sewer lines, and minimal action units, oil and chemical basins, separations basins, storage tanks, burning pits, rubble pits and piles, and radioactive and non-radioactive burial grounds; continued field investigations and work plans in accordance with the FFA; continued ground water assessment activities in the Reactor Areas, 200 Area, 600 Area, 400 Area, and 3/700 Area. Completed design and initiated construction of SRL and vadose zone ground water remediation in the 3/700 Area; continued ground water remediation design activities at 200 Area, 3/700 Area, SRL and TNX basins, acid/caustic basins, oil and chemical basins, burning pits, radioactive and non-radioactive burial grounds; continued operation of the A/M Air Strippers at the 3/700 Area.	Continue program support activities deferring some lower priority activities until FY 1996; continue management of closed waste sites; provide technical support to environmental restoration efforts; continue ground water assessment activities in the 200 Area, 600 Area, 400 Area, reactor areas, and 3/700 Area; continue site characterization and assessment activities at oil and chemical basins, separations basins, storage tanks, burning pits, rubble pits and piles, radioactive grounds, minimal action units, SRL and TNX basins, coal pile runoff and ash basins, and reactor basins; continue field investigations and work plans in accordance with the FFA. Continue limited construction of SRL and Vadose Zone ground water remediation at the 3/700 Area; continue ground water and waste site remediation design activities at 200 Area, 3/700 Area, SRL and TNX basins, acid/caustic basins, oil and chemical basins, separations basins, and burning pits; continue operation of the A/M Air Strippers at the 3/700 Area; perform interim action at the D-Area Oil Seepage Basin.	Will continue program support activities; will continue management of closed waste sites; will provide technical support to environmental restoration efforts; will continue ground water assessment activities at the 200 Area, 400 Area, 600 Area, and 3/700 Area; will continue assessment activities at SRL and TNX basins, coal pile runoff and ash basins, reactor basins, separations basins, basin sewer lines, minimal action units, oil and chemical basins, storage tanks, burning pits, rubble pits and piles and the radioactive and non-radioactive burial grounds; will continue field investigations in accordance with the FFA. Will continue ground water and waste site remediation design activities at 200 Area, 3/700 Area, SRL and TNX basins, acid/caustic basins, oil and chemical basins, rubble pits and piles, and radioactive burial grounds; will continue operation of the A/M Air Strippers at the 3/700 Area.

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Savannah River Site (SRS), SC (Cont'd)	$ 54,652	$ 51,460	$ 82,280
Subtotal, Savannah River	$ 54,652	$ 51,460	$ 82,280
Headquarters			
Headquarters	Continued support of financial and economic analyses supporting program costs and funding requirements; provided assistance in public outreach activities in support of the Environmental Management Roadshow; supported development and execution of quality assurance function and records tracking and control; provided technical assistance for conduct of system studies, such as for remediation, treatment and disposal options; provided support to the PEIS by examining EM policy issues as required under Federal Judicial Order; provided for meetings, workshops, briefings, visuals development and cataloging; provided for support of Agency for Toxic Substances and Disease Registry (ATSDR) assessment activities; provided administrative support for the lease of office space and telecommunications; provided support of Hazardous Waste Remedial Action Project (HAZWRAP), data systems support, and Remedial Action Program Information Center (RAPIC).	Continue, at a reduced level, support of financial and economic analyses supporting program costs and funding requirements; provide assistance in public outreach activities in support of the Environmental Management Roadshow; support development and execution of quality assurance function and records tracking and control; provide technical assistance for conduct of system studies, such as for remediation, treatment and disposal options; provide for meetings, workshops, briefings, visuals development and cataloging; provide for support to ATSDR assessment activities; provide administrative support for the lease of office space and logistics; provide support of HAZWRAP, data systems support, and RAPIC.	Will continue, at a reduced level, support of financial and economic analyses supporting program costs and funding requirements; provide assistance in public outreach activities in support of the Environmental Management Roadshow; will support development and execution of quality assurance function and records tracking and control; will provide technical assistance for conduct of system studies, such as for remediation, treatment and disposal options; will provide for meetings, workshops, briefings, visuals development and cataloging; will provide for support to ATSDR assessment activities; will provide administrative support for the lease of office space and logistics; provide support of HAZWRAP, HAZWOPER, data systems support, and RAPIC.
	$ 86,711	$ 50,530	$ 29,662

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III. Facilities and Sites (Defense) (Cont'd):
Remedial Action (Cont'd):
Headquarters (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Dose Reconstruction	Continued Hanford Environmental Dose Reconstruction (HEDR) and Fernald Dose Reconstruction projects; continued epidemiologic studies of the Santa Susana Field Laboratory (SSFL) under the Health Agreement with the State of California; expanded epidemiologic surveillance of cleanup workers and epidemiologic studies of environmental restoration impacts; provided reviews and analyses for health assessments done by the ATSDR; initiated additional health agreements with States hosting DOE facilities.	Continue HEDR and Fernald Dose Reconstruction projects; continue epidemiologic studies of the SSFL under the Health Agreement with the State of California; expand epidemiologic surveillance fo cleanup workers and epidemiologic studies of environmental restoration impacts; provide reviews and analyses for health assessments done by the ATSDR; initiate additional health agreements with States hosting DOE facilities.	Continue HEDR and Fernald Dose Reconstruction projects; continue epidemiologic studies of the SSFL under the Health Agreement with the State of California; expand epidemiologic surveillance fo cleanup workers and epidemiologic studies of environmental restoration impacts; provide reviews and analyses for health assessments done by the ATSDR; initiate additional health agreements with States hosting DOE facilities.
	$ 800	$ 800	$ 800
Maxey Flats, KY	Provided full DOE support as required by the Consent Decree; completed engineering efforts and conducted remedial actions.	Provide full DOE support as required by the Consent Decree; complete engineering efforts and conduct remedial actions.	Will provide full DOE support as required by the Consent Decree; will complete engineering efforts and conduct remedial actions.
	$ 2,200	$ 2,200	$ 8,000
Government Contribution to D&D Fund	Government contribution transferred to the Uranium Enrichment D&D Fund.	Government contribution to be transferred to the Uranium Enrichment D&D Fund.	Government contribution to be transferred to the Uranium Enrichment D&D Fund.
	$ 129,805	$ 133,700	$ 350,000
Subtotal, Headquarters	$ 219,516	$ 187,230	$ 388,462
Subtotal, Remedial Action	$ 1,165,527	$ 1,116,730	$ 1,262,483
Decontamination and Decommissioning (D&D)			

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Albuquerque			
Los Alamos National Laboratory (LANL), NM	Continued support of program management activities; continued assessment activities at the Phase Separator Pit; completed assessment activities at the TA-21 Filter Buildings.	Continue support of program management activities to provide direction to overall D&D effort; begin assessment activities for TA-33 Building 86 and Group 1 of the HE contaminated buildings at TA-16.	No activity.
	Continued D&D at TA-21 Buildings 3 and 4 South.	Complete D&D at TA-21 Buildings 3 and 4 South; start D&D at TA-21 Buildings 3 and 4 North.	Will continue D&D at TA-21 Buildings 3 and 4 North; continue remediation activities at the Phase Separator Pit.
	$ 4,906	$ 5,835	$ 5,252
Pinellas Plant, FL	Started D&D Cost Avoidance Initiative, which includes assessment studies of West Stack Removal, Radiological Exhaust Building 200, Area 185-Methylene Dioniline Room Cleanup, Chemical Processing Areas Decontamination, Engineering Lab-Drain System Decon, and Building 100 Subsurface Characterization.	No activity.	No activity.
	$ 1,630	$ 0	$ 0
SNL/NM	Continued S&M activities at the engineering reactor.	Continue S&M activities at the engineering reactor.	Will continue S&M activities at the engineering reactor.
	$ 86	$ 34	$ 98
Subtotal, Albuquerque	$ 6,622	$ 5,869	$ 5,350

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago			
Battelle Columbus Laboratories (BCL), OH	Released Building 9 at King Avenue; initiated D&D of Buildings 1, 4 and 5; completed D&D of Building 3 at King Avenue; completed and released Building 7A; continued LLW management and shipment activities.	Complete D&D of Buildings 4 and 5; continue D&D of Building 1; resume D&D of Building 7 (from FY 1993); provide minimum number of LLW shipments to the Hanford site in Washington and a commercial facility; provide for shipment of remote-handled TRU waste; purchase required D&D equipment; maintain waste minimization activities.	Will complete D&D of buildings 1 and 7; will initiate and complete D&D of building A and 6; will continue D&D of building 2 from FY-93; will continue LLW management and shipment activities, maintain waste minimization activities.
	$ 2,364	$ 1,800	$ 4,694
CHO, IL	Provided oversight and monitoring of S&M programs at CHO-managed sites and facilities including Site A/Plot M; assessment activities for the Separations Process Research Unit (SPRU) are on standby.	Provide oversight and monitoring of S&M programs at CHO-managed sites and facilities including Site A/Plot M; assessment activities for the Separations Process Research Unit (SPRU) are on standby.	Will provide oversight and monitoring of S&M programs at CHO-managed sites and facilities, including Site A/Plot M; D&D at SPRU remains on standby.
	$ 173	$ 175	$ 183
Reactive Metals, Inc. (RMI), OH	Submitted final Corrective Measures Study (CMS) to EPA for approval; submitted final Site Characterization Plan to NRC for approval; prepared final ground water investigation report; completed baseline document and submitted for approval.	Submit D&D site characterization work plans; submit corrective measures design to EPA; complete site ground water investigation; begin characterization of facilities and on-site and off-site soils.	Will conduct maintenance, safety, security, health physics and environmental compliance activities; will continue characterization and design engineering in preparation for D&D; will perform readiness evaluation for D&D.
	Disposed of LLW at permitted facilities from RCRA investigation.	Continue disposal of LLW at permitted facilities from RCRA investigation.	Will continue disposal of LLW at permitted facilities from RCRA investigation and D&D; will conditionally release off-site soil contamination area; will complete disassembly of one building.
	$ 12,506	$ 6,590	$ 11,124

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Chicago	$ 15,043	$ 8,565	$ 16,001
Idaho			
INEL, ID	Continued S&M of surplus facilities at the Materials Test Reactor (MTR), Engineering Test Reactor (ETR), Stored Fuel Equipment (SFE)-20/CPP-740, CPP-631/709/734/CRS, CPP-640, and the Waste Calcining Facility (WCF); initiated and completed characterization at TAN Technical Support Facilities (TSF); completed assessment of BORAX-V and TAN 607.	Continue S&M activities at TAN Technical Support Facility, MTR, ARA-I, ETR, Loss of Fluid Test (LOFT) facility, CPP-640, CPP-631, CPP-709, CPP-734, SFE-20/CPP-740, Tank Farm, and WCF.	Will continue S&M activities at MTR, ETR, LOFT, CPP-640, CPP-740/SFE-20, CPP-601, WCF, and TAN-TSF.
	Initiated D&D activities at ARA-I; continued D&D activities at ARA-II and the BORAX-V Reactor Building; completed D&D at TAN 607 and CFA Hot Laundry; completed D&D at three waste tanks from TAN-TSF.	Perform D&D activities at ARA-I, ARA-II, CPP-631, and BORAX-V.	Will continue D&D at CPP-631; will perform S&M at BORAX-V and ARA-I and ARA-II.
	$ 7,377	$ 4,916	$ 5,144
Subtotal, Idaho	$ 7,377	$ 4,916	$ 5,144

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nevada			
NTS, NV	Continued S&M of facilities; began work plan development.	Continue S&M of facilities; continue work plan development.	Will complete work plan and prepare D&D Facility Assessment Report.
	$ 555	$ 308	$ 552
Subtotal, Nevada	$ 555	$ 308	$ 552
Oak Ridge			
K-25 Site, TN	Continued S&M at the Centrifuge Facility; continued storage and disposal of hazardous Centrifuge equipment; continued hazardous materials management activities to protect on-site personnel. All other activities funded under the Uranium Enrichment D&D Fund.	Continue S&M at the Centrifuge Facility; continue storage and disposal of hazardous Centrifuge equipment; continue hazardous materials management activities to protect on-site personnel. All other activities funded under the Uranium Enrichment D&D Fund.	Will continue S&M at the Centrifuge Facility; will continue storage and disposal of hazardous Centrifuge equipment; will continue hazardous materials management activities to protect on-site personnel. All other activities funded under the Uranium Enrichment D&D Fund.
	All remediation activities funded were under the Uranium Enrichment D&D Fund.	All remediation activities funded under the Uranium Enrichment D&D Fund.	All remediation activities funded under the Uranium Enrichment D&D Fund.
	$ 2,860	$ 2,928	$ 4,065
Y-12, TN	Continued D&D planning characterization and technology efforts; completed alternatives activities, risk evaluation and NEPA documentation for Building 9201-4; continued Building 9201-4 mercury draining and asbestos removal; continued S&M activities at Building 9201-4; continued enhanced S&M program (removal actions).	Continue D&D planning characterization and technology efforts; continue Building 9201-4 mercury draining and asbestos removal; continue S&M activities at Building 9201-4; continue Building 9201-4 enhanced S&M program.	Will reduce level of effort of D&D planning characterization and technology efforts; will continue S&M activities at Building 9201-4.
	$ 14,765	$ 8,921	$ 6,490
Subtotal, Oak Ridge	$ 17,625	$ 11,849	$ 10,555

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Ohio			
Mound Plant, OH	Completed assessment phase for the Waste Disposal Building; initiated assessment phase for Building 21.	Continue assessment phase for miscellaneous soil, Sanitary Disposal Plant and Building 21.	Will complete assessment phase for Soil Area 5, 20, and 23; will complete assessment phase and initiate remediation of Building 21.
	Completed the dismantlement, size reduction and packaging of the Special Metallurgical Building (SM) and SM Penthouse; metal from the SM Building will be recycled offsite; completed the SM substation and concrete dock removal; completed the SM East Asphalt removal; initiated removal of PU-238 contaminated soil from the SM leach field catch basin; initiated operations of a soil compactor ("brickmaker") for waste minimization; completed removal of a 600 foot underground line and associated contaminated soils; resumed shipment of waste to NTS.	Complete removal of Pu-238 contaminated soil from the SM Building Leach Field Catch Basin; complete removal of SM Breezeway; initiate removal of SM North Grass Area; continue shipments of waste to NTS.	Will complete SM Leach Field Catch Basin remediation; will complete SM North Grass Area remediation; will initiate SM foundation and soil removal; will initiate preparation work for West Asphalt and Area 11 remediation activities; will complete Sanitary Disposal Building demolition, size reduction, and packaging; complete SD tanks removal; will initiate the SD soil remediation; will initiate the Waste Disposal soil remediation; will initiate the miscellaneous soil remediation; continue shipments of waste to NTS.
	$ 16,064	$ 14,045	$ 21,141
FEMP, OH	Continued preliminary engineering for OU3; continued D&D activities; initiated two OU3 D&D projects identified in the Consent Agreement including D&D of Plant 7; continued hazard abatement activities in support of D&D; continued essential comprehensive quality assurance efforts for D&D activities; provided for appropriate level of quality assurance and health and safety support for D&D efforts; continued health and safety programs for D&D activities and monitoring D&D compliance activities.	Complete preliminary and initial engineering for OU3; continue essential D&D activities; complete 12 D&D projects identified in the Consent Agreement; continue hazard abatement activities in support of D&D; continue essential comprehensive quality assurance efforts for D&D activities; provide for appropriate level of quality assurance and health and safety support for D&D efforts; continue health and safety support for D&D compliance activities.	Will continue D&D activities including decontamination and demolition of 7 buildings; will complete eight D&D projects; will continue hazard abatement activities in support of D&D; will continue essential comprehensive quality assurance efforts for D&D; will continue health and safety programs for D&D activities; will provide for appropriate level of quality assurance and health and safety support for D&D efforts; will continue monitoring D&D compliance activities.
	$ 38,587	$ 24,520	$ 19,520

III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Ohio	$ 54,651	$ 38,565	$ 40,661
Richland			
Hanford Site, WA	Continued S&M of 100 and 200 Area facilities; performed 100 and 200 Area repairs as required to maintain safe conditions; performed detailed engineering for decommissioning of the 232-Z and 233-S facilities; initiated plutonium removal activities on 232-Z, initiated characterization of 233-S; initiated EE/CA preparation for the riverlines; continued D&D program management support, including outyear planning for new project starts such as NEPA compliance, preliminary estimates and schedules.	Continue S&M of 100 and 200 Area facilities; complete conceptual design report for the surplus reactors; initiate NEPA/permitting required to support the riverlines project; Continue D&D program management support, including outyear planning for new project starts such as NEPA compliance, preliminary estimates and schedules.	Will continue S&M of 100 and 200 Area facilities; will continue high priority corrective actions; will continue to support the riverline EE/CA; Will continue D&D program management support, including outyear planning for new project starts such as NEPA compliance, preliminary estimates and schedules.
	Initiated demolition of the 185/189/190-D complex; completed demolition and site restoration of the 185/190-B water treatment; completed 105-F roof repairs and electrical upgrades identified by risk analysis teams; completed asbestos abatement activities at 4 high-risk facilities; completed 60 percent of scheduled abatement actions; continued regulatory compliance actions for asbestos management.	Initiate and complete Phase I definitive design and initiate staging and systematic removal of 233-S complex; complete demolition of the 190-D complex, 1701-FA and 1702-DR; perform 100 and 200 Area repairs as required to maintain safe conditions; complete asbestos abatement activities at 6 high risk facilities; prepare cost estimates and work plans for 6 high risk facilities; continue regulatory compliance for asbestos management; completion of plutonium removal activities on 232-Z.	Will initiate and complete demolition of the 190-C and 183-C building; will initiate the 108-F building demolition project; will complete final closeout of the 190-D complex; will complete Phase II decontamination of 233-S; will complete inventory reduction in the 232-Z building; will perform 100 and 200 Area repairs as required to maintain safe conditions; will continue asbestos abatement at high-risk facilities; will continue regulatory compliance for asbestos management.

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Site, WA (Cont'd)	N REACTOR	N REACTOR	N REACTOR
	Maintained a regulatory compliant state while initiating execution of the N Reactor Deactivation Program Plan including initiation of deactivation of ancillary facilities; continued environmental monitoring and surveillance; analyzed and developed alternatives for a liquid effluent treatment system.	Maintain a regulatory compliant state at all facilities continuing deactivation of facilities in accordance with the Deactivation program Plan; continue required environmental surveillance and maintenance; deactivate and stabilize an additional 10 facilities; perform handling and disposal of radioactive, hazardous and mixed wastes; procurement and installation of a water processing plan for pre-treatment of effluents; prepare NEPA documentation for deactivation; submit closure report to Congress for the reactor.	Will maintain a regulatory compliant state at all facilities; will continue maintenance of operating systems and deactivation of approximately 7 complex facilities, including initiation of 2 others. N Basin hardware removal will be completed in late FY 1996 with additional scope for installation of water processing equipment, water disposition, and coating basin surfaces.
	$ 41,171	$ 43,014	$ 45,941
Subtotal, Richland	$ 41,171	$ 43,014	$ 45,941
Rocky Flats			
Rocky Flats Plant, CO	Initiated subproject development and initiated selection of the pilot projects, including selection, planning, and execution of the D&D pilot projects for plutonium, non-plutonium, and support buildings; initiated and completed security for D&D operations located near building 121.	Implement small scale D&D projects and continue operation of three pilot projects; initiate and finalize removal of building 367; finalize plans for D&D of buildings 886, 889, 707, modules D&E, and 12 rooms in building 779.	Will continue D&D pilot projects; will begin engineering and/or actual D&D of buildings 886, 707, modules D&E, and 12 rooms in building 779; will complete D&D of building 889.
	$ 2,980	$ 4,898	$ 8,200
Subtotal, Rocky Flats	$ 2,980	$ 4,898	$ 8,200

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III. Facilities and Sites (Defense) (Cont'd):
Decontamination and Decommissioning (D&D) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oakland			
Santa Susana Field Laboratory (SSFL), CA	Continued D&D activities at SSFL Hot Lab; removed RA Drain Pipe and Hold Up Tank; began shipments of RA Waste to NTS; and performed final survey of Hot Cells and Decon Rooms.	Continue D&D of SSFL Hot Lab; complete D&D of basement operating gallery and mockup areas; complete removal of support drains; and continue RA waste shipments to NTS.	Will continue D&D of SSFL Hot Lab; complete D&D of attic, storage and air lock area, roof, and 6 rooms; will continue RA waste shipments to NTS.
	$ 1,272	$ 1,080	$ 1,000
Subtotal, Oakland	$ 1,272	$ 1,080	$ 1,000
Savannah River			
SRS, SC	Initiated prioritization and organization of D&D transition activities; continued design activities for D&D of SED I and II at A-Area; continued S&M at specific ER facilities; continued D&D program management; initiated characterization and design for D&D of the Beta/Gamma Incinerator at H-Area and the 232-F Tritium Facility at F-Area; completed D&D of six R-Reactor Support facilities.	Organize transition activities; complete design for SED I and II at A-Area; prepare for physical D&D of SED I and II at A-Area; continue S&M at specific ER Savannah River facilities; continue D&D program management.	Will initiate limited D&D of SED I and II facilities at A-Area; will perform limited D&D activities at the Tritium Extraction Facility (232-F) at F-Area and Beta Gamma Incinerator at H-Area; will continue S&M at specific ER Savannah River facilities; will continue D&D program management.
	$ 8,158	$ 4,150	$ 6,225
Subtotal, Savannah River	$ 8,158	$ 4,150	$ 6,225
Subtotal, Decontamination and Decommissioning (D&D)	$ 155,454	$ 123,214	$ 139,629

III. Facilities and Sites (Defense) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Landlord			
Ohio			
FEMP, OH	Continued essential support of base services, including utility support, transportation services, decontamination, procurement, contracting, inventory control, and all general site services; continued utilities life extension and sanitary sewage system upgrades; provided maintenance and utility equipment, security communications equipment, securities and safeguards support; continued to support litigation activities with documentation and case preparation; initiated sprinkler system upgrade; implemented essential facility upgrade construction projects, formerly general plant projects, to ensure site readiness for support services and emergency response.	Continue essential support of base services, including utility support, transportation services, decontamination, procurement, contracting, inventory control, and all general site services; continue essential utilities life extension and sanitary sewage system upgrades; provide maintenance and utility equipment, security communications equipment, securities and safegusrds support; continue to support litigation activities with documentation and case preparation; continue sprinkler system upgrade; continue to implement essential facility upgrade construction projects, to ensure site readiness for support services and emergency response.	Will continue essential support of base services, including utility support, transportation services, decontamination, procurement, contracting, inventory control, and all general site services; will continue essential utilities life extension and sanitary sewage system upgrades; will provide maintenance and utility equipment, security communications equipment, securities and safeguards support; will continue to support litigation activities with documentation and case preparation; will continue sprinkler system upgrade; will continue to implement essential facility upgrade construction projects, to ensure site readiness for support services and emergency response.
	$ 66,308	$ 48,889	$ 47,332
Subtotal, Ohio	$ 66,308	$ 48,889	$ 47,332

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III. Facilities and Sites (Defense) (Cont'd):
Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge			
K-25 Site, TN	All activities funded under the newly established Uranium Enrichment D&D Fund.	Support Landlord activities including site infrastructure utilities, environment, health and safety programs. All other activities funded under the Uranium Enrichment D&D Fund.	Will support Landlord activities including site infrastructure utilities, environment, health and safety programs. All other activities funded under Uranium Enrichment D&D Fund.
	$ 0	$ 11,099	$ 12,660
Subtotal, Oak Ridge	$ 0	$ 11,099	$ 12,660
Subtotal, Landlord	$ 66,308	$ 59,988	$ 59,992
Long-Term Surveillance and Maintenance			
Richland			
Hanford Site, WA	No activity.	No activity.	Will install 12 wells and monitor a total of 22 wells for the presence of groundwater contamination at the 1100 Area.
	$ 0	$ 0	$ 229
Subtotal, Richland	$ 0	$ 0	$ 229

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III. Facilities and Sites (Defense) (Cont'd):
Long-Term Surveillance and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Savannah River			
Savannah River Site, SC	Performed S&M activities at active and inactive waste sites.	Perform S&M activities at active and inactive waste sites.	Will perform S&M activities at active and inactive waste sites.
	$ 3,950	$ 3,436	$ 1,636
Subtotal, Savannah River	$ 3,950	$ 3,436	$ 1,636
Subtotal, Long-Term Surveillance and Maintenance	$ 3,950	$ 3,436	$ 1,865
Compliance Oversight			
Albuquerque	Provided funding for the Texas, Ohio and Florida AIPs.	Provide funding for the Texas, Ohio, Florida, and Missouri AIPs and the Innovative Treatment Remediation Demonstration (ITRD).	Will provide funding for the Texas, Ohio, Florida, and Missouri AIPs and the ITRD.
	$ 1,345	$ 4,591	$ 5,135
Chicago	Provided support for reimbursement of State costs under CERCLA for the State of New York.	Provide support of AIP with Illinois; provide support for reimbursement of State costs under CERCLA for the State of New York.	Will provide support of AIP with Illinois; will provide support for reimbursement of State costs under CERCLA for the State of New York.
	$ 150	$ 232	$ 300
Idaho	Funded the grant for the oversight agreements with the State of Idaho and the Shoshone-Bannock Indian Tribe.	Fund the grant for the oversight agreements with the State of Idaho and the Shoshone-Bannock Indian Tribe.	Will fund the grant for the oversight agreements with the State of Idaho and the Shoshone-Bannock Indian Tribe.
	$ 1,883	$ 1,600	$ 1,942
Nevada	Continued funding of AIPs with Nevada, Mississippi, and Alaska.	Continue funding of AIPs with Nevada and Mississippi; provide partial funding of AIP with Alaska.	Will continue funding of AIPs with Nevada and Mississippi; will provide partial funding of AIP with Alaska.

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III. Facilities and Sites (Defense) (Cont'd):
Compliance Oversight (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nevada (Cont'd)	$ 1,952	$ 2,128	$ 2,000
Oak Ridge	Provided AIP funding for State oversight and FFA support in Ohio, Kentucky, and Tennessee; sampled accumulated waste and compiled information for analysis under Federal Facilities Compliance Act (FFCA) at Paducah, Kentucky; prepared development of deliverables required under the FFCA at Portsmouth, Ohio.	Provide AIP funding for State oversight and FFA support in Ohio, Kentucky, and Tennessee.	Will provide AIP funding for State oversight and FFA support in Ohio, Kentucky, and Tennessee.
	$ 282	$ 10,800	$ 11,400
Richland	Provided funding for Washington and Oregon oversight of Richland TPA.	Provide funding for Washington and Oregon oversight of Richland TPA.	Provide funding for Washington and Oregon oversight of Richland TPA.
	$ 3,020	$ 2,700	$ 2,700
Oakland	Provided grants to California State Regional Water Quality Control Board and Department of Toxic Substance Control for document review and CERCLA Oversight activities.	Provide grants to California State Regional Water Quality Control Board and Department of Toxic Substance Control for document review and CERCLA Oversight activities.	Will provide grants to California State Regional Water Quality Control Board and Department of Toxic Substance Control for document review and CERCLA Oversight activities.
	$ 200	$ 625	$ 625
Savannah River	Provided reimbursement to the State of South Carolina for CERCLA oversight activities; provided funding through AIPs to States of Georgia and South Carolina for emergency preparedness/planning and environmental monitoring.	Provide reimbursement to the State of South Carolina for CERCLA oversight activities; provide funding through AIPs to State of Georgia and South Carolina for emergency preparedness/planning and environmental monitoring.	Will provide reimbursement to the State of South Carolina for CERCLA oversight activities; will provide funding through AIPs to State of Georgia and South Carolina for emergency preparedness/planning and environmental monitoring.
	$ 2,528	$ 1,495	$ 4,062

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III. Facilities and Sites (Defense) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Compliance Oversight	$ 11,360	$ 24,171	$ 28,164
Program Direction			
Headquarters	Funding by Object Class:		
	Personnel		
	Compensation $10,874	$10,368	$10,368
	Benefits 1,640	1,595	1,595
	Travel 1,128	1,196	1,196
	Contractor Services 141	133	133
	$13,783	$13,292	$13,292
	Provided for 128 FTEs at Headquarters to manage Environmental Restoration activities.	Provides for 134 FTEs at Headquarters to manage Environmental Restoration activities. An additional 15 FTEs have been provided to the ER program through EM's FTE Pilot program. Funding for these FTEs will be identified through productivity savings during the fiscal year and transferred to the Program Direction account.	Provides for 130 FTEs at Headquarters to manage Environmental Restoration activities.
	128.0 FTE $ 13,783	149.0 FTE $ 13,292	130.0 FTE $ 13,292
Field Offices	Funding by Object Class:		
	Personnel		
	Compensation $24,574	$25,410	$47,467
	Benefits 6,481	6,646	8,057
	Travel 3,597	3,518	5,589
	Contractor Services 3,413	3,518	9,435
	$38,065	$39,093	$70,548
	Provided for 351 FTEs which supported Environmental Restoration program management and administrative functions at the various Department field offices.	Provides for 342 FTEs which support Environmental Restoration program management and administrative functions at the various Department field offices. An additional 278 FTEs have been provided to the ER program through EM's Pilot program. Funding for these FTEs will be identified through productivity savings during the fiscal	Provides for 656 FTEs which support Environmental Restoration program management and administrative functions at the various Department field offices. The EM program was allocated an additional 400 FTEs for FY 1996. These FTEs will be allocated solely to the

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III. Facilities and Sites (Defense) (Cont'd):
Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Field Offices (Cont'd)		year and transferred to the Program Direction account.	field based on a bid process similar to that conducted in FY 1994. This process will determine the distribution of these FTEs by program, by field office based on additional efficiencies to be achieved. Funding will be provided by reallocation of funds redirected from savings realized.
	351.0 FTE $ 38,065	620.0 FTE $ 39,093	656.0 FTE $ 70,548
Subtotal, Program Direction	479.0 FTE $ 51,848	769.0 FTE $ 52,385	786.0 FTE $ 83,840
Facilities and Sites (Defense)	479.0 FTE $ 1,454,447	769.0 FTE $ 1,379,924	786.0 FTE $ 1,575,973

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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
Environmental Restoration
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Operative Expense Funded Project Summary

Project Title	Previous Oblig	FY 1994 Approp	FY 1995 Approp	FY 1996 Request	Cost Estimate *
Albuquerque Laboratory Environmental Restoration Project	$ 230,779	$133,215	$116,025	$ 93,699	$ 826,306
Albuquerque Production Environmental Restoration Project	300,669	58,778	69,953	71,964	704,783
Chicago Laboratories Environmental Restoration Project	19,099	15,282	11,924	11,948	90,468
Battelle Columbus Laboratories Decommissioning Project	30,187	2,364	1,800	4,694	53,265
Fernald Environmental Management Project	1,074,405	299,128	257,711	256,330	2,617,805
Idaho National Engineering Laboratory Environmental Restoration Project	237,458	84,643	114,046	84,029	763,002
Nevada Environmental Restoration Project	91,148	46,363	32,587	46,023	350,224
Oak Ridge Field Office	845,351	102,769	101,607	101,267	1,429,288
Hanford Site Environmental Restoration Project	605,802	196,671	211,856	168,902	1,666,396
Rocky Flats Plant Environmental Restoration Project	358,012	143,042	133,732	143,312	1,181,740
Oakland Environmental Restoration Project	110,776	31,236	28,527	27,300	275,739
Savannah River Site Environmental Restoration Project	254,029	69,288	60,541	94,203	752,720
TOTAL, Defense Environmental Restoration	$4,157,715	$1,182,779	$1,140,309	$1,103,671	$10,711,736

*Cost Estimate reflects estimate through FY 2000 only.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

OVERVIEW

WASTE MANAGEMENT (DEFENSE)

I. INTRODUCTION

Since the beginning of the Nuclear Age, the Department of Energy (DOE) and its predecessors, the Energy Research and Development Administration and the Atomic Energy Commission, have been generating radioactive waste primarily from defense nuclear material production, and research and development activities. Those activities produced large quantities of waste; and its disposition was of lesser importance than the production of nuclear materials. As a result, waste was stored or disposed of in a manner which does not meet today's more conservative environmental safety and health requirements. Much of the waste contains radioactive materials, hazardous chemicals, or both.

Based on recent world events and the downsizing and reconfiguration of the nuclear weapons complex, the volume of high-level and transuranic waste generated by Defense Programs over the next several years is expected to diminish greatly. However, because of that very downsizing, waste generated by the closure of facilities and acceleration of cleanup is expected to increase dramatically the volumes of mixed low-level, low-level and transuranic waste.

II. MISSION

The mission of the Waste Management Program is to protect people and the environment from the hazards of DOE waste by providing an effective and efficient system to minimize, treat, store and dispose of the waste as soon as possible. To support this mission, DOE has developed strategies to treat, store and dispose waste. These strategies are being developed by waste type, since similar types of waste may be managed in a similar manner. For example, high-level waste (HLW) requires shielding and remote handling whether it is stored in tanks at Savannah River, South Carolina or Richland, Washington. Other waste type strategies presented here include low-level waste (LLW), transuranic waste (TRU), hazardous waste (HAZ), sanitary waste (SAN) and mixed waste. DOE's spent nuclear fuel is material requiring special management and handling because of its high radioactive content. Strategic, long-range plans for managing each waste type and spent fuel are in development to provide a basis for integrated planning across the DOE waste management complex. A detailed data base provides quantitative information by waste type, providing the magnitude of the DOE waste management challenge.

III. GOALS

In FY 1996, the Waste Management Program will continue to protect the public and worker health and safety. The Program will also protect the environment from damage from radioactive and hazardous waste. The Program will continue to make progress on reducing long-term risk by treating waste with the goal of ultimate disposal.

The FY 1996 request for the Waste Management Program (Defense) has been reduced by approximately 10 percent from the FY 1995 Appropriation. At the same time, requirements have increased by about 10 percent. Our plan to meet the challenge of doing more with less has been, and will be, accomplished by focusing on essential activities needed to meet our goals and by reducing infrastructure and overhead costs. There is also a significantly higher degree of risk that some requirements may not be met on time. The Department believes this risk is acceptable in order to meet our cost reduction goals.

The Department will continue to work in partnership with our regulators and stakeholders to prioritize activities and find new approaches to the problems we face in order to reduce costs. The FY 1996 request was developed assuming that, for certain activities, a more cost-effective approach can be developed in cooperation with our regulators. In other areas, such as the High Level Radioactive Waste Treatment System at Hanford, the Department is exploring privatizing parts or all of the effort to reduce costs. Where practical, the Department will place a higher priority on activities that reduce risk.

The Waste Management Program has, as its goals, the following major accomplishments planned for FY 1996:

- Start up the Defense Waste Processing Facility at Savannah River, South Carolina, in December 1995;

- Finalize regulatory compliance package for submittal to the Environmental Protection Agency for the Waste Isolation Pilot Plant;

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- Operate the Toxic Substances Control Act (TSCA) Incinerator at Oak Ridge, Tennessee;
- Improve safety of tank waste storage at Hanford, Washington;
- Privatize operations where economic efficiencies clearly warrant such action;
- Build a new spent nuclear fuel storage facility at Hanford;
- Improve safety of spent nuclear fuel storage at Idaho;
- Implement Site Treatment Plans as negotiated through the Federal Facility Compliance Act process;
- Provide waste management services to Departmental programs;
- Promote waste minimization efforts in all Departmental operations.

IV. WASTE TYPE STRATEGY

The following list of the seven types of waste this program manages outlines the strategy, benefits, and planned accomplishments of the waste management program.

High-Level Waste

High-level waste is the highly radioactive material resulting from the reprocessing of spent nuclear fuel. It includes mainly liquid waste remaining from the recovery of uranium and plutonium from spent fuel. Other forms of high-level waste include sludges and calcine. Currently, there is about 400,000 cubic meters of high-level waste in storage, with a radiation content of about one billion curies. Because of the high radiation level of the waste, it must be remotely-handled and heavily shielded. Also, because it generates heat on its own from radioactive decay, provisions are needed to dissipate heat, thus adding to the cost of managing this waste. In FY 1996, about $1.0 billion, 40% of this request, is devoted to the management of high-level waste. All defense high-level waste is located in facilities at Hanford, Savannah River and Idaho.

The long term objective in the management of high-level waste is to dispose of the radioactive portion of waste in a deep geologic repository. The Waste Management Program supports activities by other DOE organizations to assure a geologic repository is completed. Near-term goals for the Waste Management Program include solidifying liquid high-level waste for disposal in a geologic repository. Actions to support the near-term goal include commencement of hot operations of the Defense Waste Processing Facility at Savannah River, South Carolina, to convert the liquid waste into solid borosilicate glass in canisters, which will then be stored awaiting the opening of a geologic repository for disposal. Other actions to support the near-term goal include studies at Hanford and Idaho to determine the appropriate waste form and technology to be used to achieve that waste form, so it may be properly disposed in a geologic repository.

The benefits of these actions are a reasoned and orderly development of technology, based upon actual operating experience at the Defense Waste Processing Facility, to produce waste forms that allow environmentally safe disposal. Major achievements of the past year include the development of operating procedures, training and completion of heatup of the melter in preparation of start up of vitrification activities at Defense Waste Processing Facility in FY 1996. Other accomplishments include reduction in HLW volume through calcining at Idaho, and upgrades to tank waste storage at Hanford with a significant reduction in safety concerns.

DOE Owned Spent Nuclear Fuel

DOE's spent nuclear fuel consists of irradiated fuel and target assemblies discharged from nuclear reactors. There are several categories of spent fuel: spent fuel and target assemblies from nuclear material production reactors, spent fuel from commercial reactors, spent fuels from government sponsored research and development activities, spent fuel from non-government, domestic and foreign research reactors. DOE owned spent fuel is stored at Idaho, Hanford, Oak Ridge, and Savannah River. Commercial spent fuel is mainly stored in pools at power generating stations, and this type of fuel is generally not covered by this program. Spent fuel is highly radioactive and requires isolation in order to protect workers, the public and the environment. In 1992, DOE discontinued reprocessing of spent fuel for the nuclear weapons program. While this action eliminated future high-level waste generation, it added to the existing inventory of spent nuclear fuel.

OVERVIEW - WASTE MANAGEMENT (DEFENSE) (CONT'D)

The long-term goal for the DOE spent nuclear fuel program is disposal by isolation in a geologic repository. Near-term goals include providing safe storage of this material until a geologic repository is ready to accept material for disposal. Several issues have arisen due to the lack of safe and adequate storage capacity at DOE facilities. Therefore, the focus of the spent fuel strategy for DOE owned fuel is to develop short-term dry storage capacity, and to use existing storage more wisely. Recent accomplishments relative to spent fuel include reracking spent fuel at Idaho so more fuel can be stored. Also at Idaho, work continued to develop dry fuel storage technologies, which increase storage capacity, while eliminating the use of storage pools that may leak under certain conditions. Activities at Hanford have been initiated to remove spent fuel from the K-Basins near the Columbia River. Savannah River has instituted a program to receive Foreign Research Reactor fuel for interim storage until it can be properly disposed.

Major milestones for the program include publishing the DOE complex Spent Nuclear Fuel Environmental Impact Statement, and receipt and storage of a limited quantity of urgent-relief foreign research reactor spent fuel to maintain the U.S.'s nuclear non-proliferation policy in FY 1995. Waste Management will also issue its Strategic Plan and Technology Plan for managing the various fuels and begin to implement the decisions resulting from the Spent Nuclear Fuel Environmental Impact Statement.

Transuranic Waste

Transuranic waste (TRU) is, in technical terms, radioactive waste containing more than 100 nanocuries per gram of alpha-emitting isotopes with atomic numbers greater than 92 and half-lives greater than 20 years. This waste is the result of fuel reprocessing and from the fabrication of plutonium weapons or plutonium-bearing reactor fuels. For some TRU waste, little or no shielding is required; this is referred to as "contact-handled" TRU waste. On the other hand, there are TRU radionuclides which require shielding because of their gamma or neutron emissions. These are referred to as "remote-handled" TRU waste. There is currently about 104,000 cubic meters of contact handled TRU waste and about 2,000 cubic meters of remote handled in the Environmental Management inventory. This volume represents about 2 million curies. There are six major sites where TRU waste is located: Hanford, Idaho, Los Alamos, Oak Ridge, Rocky Flats and Savannah River. In addition, there are ten sites with lesser quantities.

It should also be noted, prior to 1970 TRU waste was considered low-level waste and disposed through burial. At that time it was realized that greater confinement from the environment was needed. Since the early 1970's, TRU waste has been segregated from other radioactive waste and placed in retrievable storage. The 205,000 cubic meters of pre-1970 waste is referred to as "buried" TRU and is managed by the Environmental Restoration Program. Retrievably stored waste is managed by the Waste Management Program.

The near-term goal of the TRU waste program is to complete regulatory requirements to allow the disposal of waste at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. The long-term goal is to dispose of all TRU waste in this repository if it is found to be acceptable. By preparing WIPP to accept waste, DOE can further its mission to effectively manage waste. Moreover, by opening WIPP, a significant portion of this waste will be isolated from the environment and effectively disposed.

Achievements for the past year include continued preparation of waste for shipment to WIPP from Idaho, including retrieval, characterization and packaging. Removal of remote-handled TRU waste from the hot cells at Los Alamos was nearly completed. At Richland, 10 drums of TRU waste were retrieved in support of the design of the full-scale TRU retrieval project, and in-situ characterization of the remaining trenches was initiated. Construction work commenced on the TRU waste enclosures at Savannah River, and DOE began a new test strategy by using an enhanced laboratory program to determine whether WIPP will meet regulatory requirements.

Low-Level Waste

Low-level waste (LLW) is defined as any radioactive waste which is not high-level, transuranic, spent fuel, or mill tailings. The majority of low level waste is material contaminated with small amounts of radioactively and can be contact-handled. However, a small amount can also be sufficiently radioactive as to require shielding to protect workers, the public and the environment.

Generally speaking, low-level waste is disposed as it is generated. Low-Level waste is disposed at Los Alamos, Idaho, Savannah River, Oak Ridge, Nevada and Richland; the last two sites also accept offsite low-level waste from the DOE Complex. Through 1992, about 2.9 million cubic meters of LLW had been disposed, representing about 1.6 million curies.

The near-term and long-term goals of the defense funded low-level waste management program are nearly identical: to continue disposal of LLW in an environmentally safe manner at a pace to match generation of the waste. In FY 1996, $350 million (14%) of this request is allocated to LLW management. The benefits of this program include the disposal of very large volumes of waste in a manner which protects workers and the public, meets DOE requirements, and is cost-efficient. Future activities will deal with soils contaminated with LLW which is being remediated by the Environmental Restoriation Program. Volumes and characteristics of this type of LLW are not known at this time.

The past years' achievements include continued disposal at Nevada and Richland of DOE-generated LLW. Generator sites worked on enhancing characterization and waste certification programs to assure waste acceptance criteria were met, thus providing a higher level of protection through increased knowledge of container contents. Also, LLW generator sites closed out all items from various Tiger Team reviews, audits and inspections. The results of these activities help assure LLW is being managed effectively.

Mixed Waste

Mixed waste consists of waste containing both hazardous (as defined by the Resource Conservation and Recovery Act) and radioactive (as defined by Atomic Energy Act) components and may be high-level, low-level or TRU mixed waste. Low-level mixed waste represents about one-third of the volume of mixed waste. The ultimate long-term goal is to dispose of this waste. Exact dates for completion cannot be given at present, but it is expected that several new treatment or storage facilities will be needed before adequate disposal can be provided. The mixed waste program is currently being driven by the Federal Facility Compliance Act.

The Federal Facility Compliance Act (FFCAct), passed in October 1992, waived sovereign immunity for Federal agencies from fines and penalties for land disposal storage violations. However, the Act does allow a three-year delay until the imposition of fines and penalties for certain violations related to DOE's storage of mixed waste; this three-year delay expires on October 6, 1995. During that time, the Act requires the Secretary of Energy to develop and submit Site Treatment Plans to the regulating agency (either the State or Environmental Protection Agency) for the development of treatment capacity and technologies for treating mixed waste. According to the Draft Site Treatment Plans issued in August 1994, there is approximately 800,000 cubic meters of mixed waste in inventory and projected to be generated within the next five years.

DOE is continuing to work with the States, the Environmental Protection Agency (EPA), Indian Tribes, and stakeholders through the Federal Facility Compliance Act process and other mechanisms to develop a national configuration of mixed waste treatment facilities. It is expected that by the end of March 1995, but in no event later than April 6, 1995, 48 Proposed Site Treatment Plans will be submitted to the regulatory agencies. Those agencies will then make them available for public review and comment, and will continue to work with DOE toward issuing 48 Compliance Orders by October 1995.

The past year's achievements include the preparation and submission of 48 Conceptual Site Treatment Plans. In August 1994, the Draft Site Treatment Plans were submitted to the States and EPA and were made available to the public. During FY 1994 site and national level discussions were held. These will continue during FY 1995. It is expected that by the end of March 1995, the proposed Site Treatment Plans will be submitted and will be the focus of discussions and negotiations with States/EPA and other stakeholders as part of the FFCAct process. Discussions with the States, EPA, tribes, and stakeholders will continue during FY 1996 and modifications to the Site Treatment Plans and Compliance Orders will occur, either as the result of these discussions, or as new information and technology develops.

Hazardous and Sanitary Waste

Hazardous waste is the waste which is defined as hazardous by the Resource Conservation and Recovery Act (RCRA). It consists of waste, which because of its concentration or physical or chemical characteristics, may cause or contribute to mortality or illness or pose a substantial threat if not properly managed. The most common hazardous wastes generated by DOE include spent solvents, corrosives, ignitables, metals, specialty chemicals used by research and development laboratories, explosives, PCBs and asbestos. Hazardous waste can be harmful to humans by chemically or physically attacking skeletal, nervous or other bodily systems. In many ways hazardous waste is more difficult to deal with than radioactive waste because chemicals in waste may have an unknown synergistic effect and exposure cannot be easily monitored.

Sanitary waste is office waste, cafeteria waste, sewage, sewage sludges, plastic, wood, rubber, rags and similar materials. The solid sanitary waste is disposed in approved sanitary landfills, and liquid sanitary waste is treated in wastewater treatment facilities prior to discharge in receiving streams. Sanitary waste tends to represent a greater threat to the environment than to humans. The near and long-term goals for both hazardous and sanitary waste types is the same: maintain environmental compliance while at the same time disposing of waste as it is generated. DOE uses both on-site and off-site disposal facilities for its hazardous waste and sanitary waste.

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DOE maintains a high degree of compliance with environmental regulations in its management of these waste types. This is in part due to waste minimization efforts that have successfully lowered the volume of hazardous waste generated - only about 10 million kilograms of hazardous waste were generated in 1991; down from about 30 million kilograms in 1987. All sites within the DOE complex produce hazardous and sanitary waste; however, the largest hazardous waste generators are the Kansas City Plant, Lawrence Livermore National Laboratory and Nevada.

The benefit of proper management of hazardous and sanitary wastes are they provide environmentally acceptable disposal of large volumes of DOE waste. In FY 1996, the Waste Management Program will allocate about $225 million (9%) of its budget to Hazardous and Sanitary Waste Management.

The past year's achievements related to hazardous and sanitary waste include implementation of improved characterization procedures to assure hazardous waste constituents have been properly classified to meet packaging, transportation and disposal criteria. Temporary accumulation, treatment and disposal capacity across the complex generally kept pace with the need. Numerous construction projects are planned to expand capacity, to provide a higher degree of treatment, or to replace existing facilities which have reached the end of their design life. Projects such as replacement of sewers, new sewage treatment facilities, new landfills are examples of projects needed to manage sanitary wastes contained in this budget.

Waste Minimization and Pollution Prevention

As can be seen above, a simple and effective way to reduce the cost of managing waste is to reduce the amount of waste to be stored, treated or disposed. The purpose of the waste minimization program is to save money by reducing the amount of waste generated. The program is directed at all waste types and is based on DOE's policy to incorporate waste minimization and pollution prevention into the planning, design and operation of all facilities, irrespective of waste type. The reduction or minimization of waste can be a significant contributor to DOE's efforts to do more with less. The strategy is, first, to reduce waste generation through source reduction including substitution; second, recycle material incapable of being eliminated; and third, treat all waste requiring treatment to reduce toxicity or mobility prior to disposal. As a result, waste minimization is important to waste generators, the waste management program and to environmental regulators.

Managing the Waste Minimization effort is two-fold. On one hand, the Office of Environmental Management is responsible for developing and implementing a complex-wide program to which all DOE generators must adhere. On the other hand, the Waste Management Program is a waste generator, and must adhere to its own reduction rules. Responsibilities include planning, integrating, coordinating and implementing policy concerning the waste minimization program; implementing requirements of pollution prevention Executive Orders (12856 and 12873); implementing cost-effective waste minimization practices and facility modifications at Environmental Management site operations; coordinating Department activities and exchanging information with other federal agencies, the States and private sector organizations; and evaluation and reporting on the status of DOE waste minimization efforts. The past year's efforts have included the development of site-wide programs for each waste generator, and includes activities such as implementing waste minimization opportunities, recycling, awareness training, solvent substitution, improved waste segregation, development of waste minimization and pollution prevention plans and performing process waste assessments. The national program is coordinated at the headquarters level and the past year's activities include establishment of an affirmative procurement program, creation of a return on investment program, implementing Executive Orders, appraisal of site programs, and implementation of the Waste Minimization crosscut plan.

V. DESCRIPTION AND BUDGET OF PROGRAM BY OPERATIONS OFFICE

The Waste Management Program manages its activities through a series of regional offices which were formed to complete specific missions. Richland, Idaho, Savannah River and Oak Ridge were established to provide nuclear weapons materials and components. Other offices were formed in conjunction with the National Laboratories to provide a research and development capability in the areas of weapons development, energy production or biomedical research. The weapons facilities were the primary generators of high-level and transuranic wastes and spent nuclear fuel. They also produced large volumes of low-level, mixed waste and hazardous waste. The National Laboratories, on the other hand, generated a wide variety, and generally small volumes, of waste which are mostly mixed low-level or hazardous in nature. The difficulty associated with the waste generated from the laboratories is associated with the characterization, monitoring, and storage of numerous waste streams. The following describes the major waste problems specifically associated with the operations offices.

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Albuquerque

The Albuquerque Operations Office manages seven sites in five states. The sites may be categorized into three groups: weapons facilities, research and development laboratories, and one waste disposal demonstration project. The weapons facilities include the Kansas City Plant, the Pantex Plant, and the Pinellas Plant. These sites were mainly associated with the production or assembly of weapons or weapons components. In FY 1996, responsibility for the Mound Plant will transfer to the new Ohio Field Office, and is no longer managed by Albuquerque. The laboratories, which consist of the Los Alamos National Laboratory, Sandia National Laboratory-New Mexico, and Sandia National Laboratory-California have been involved in studies related to nuclear and non-nuclear weapons components. The waste produced at these facilities include low-level, mixed, hazardous and sanitary waste streams, and small amounts of other waste from research. The primary waste management activities include storage and off-site shipment and disposal of waste. The last site - Waste Isolation Pilot Plant (WIPP) - is a subsurface research and demonstration facility designed to test the suitability of deep geological disposal for defense-generated TRU waste. Key efforts and decisions made in the test program in FY 1996 may lead to operation of the $1 billion facility by 1998. The Albuquerque Operations Office continues to support WIPP's federal employee's salaries and expenses.

The facility which produces the largest volume of waste within the Albuquerque organization is the Los Alamos National Laboratory, and its most significant waste management issue relates to the remediation of its TRU waste storage pads. The State of New Mexico inspected the facilities and found that TRU was not being properly stored. The State issued a Notice of Violation, and a compliance agreement with the State has been signed. Construction of temporary storage facilities for the TRU waste is scheduled for FY 1995 with removal of approximately 7000 cubic meters of TRU waste from existing non-compliant storage. The FY 1996 budget provides for acceptable compliance risk at all Albuquerque sites. In the area of mixed waste treatment, Albuquerque will focus on developing small scale mixed waste mobil treatment units. These units can be shared, thereby minimizing capital outlays at each site. Additionally, budget profiles for previously planned treatment facilities at Los Alamos and Pantex have been adjusted to reflect realistic project requirements. Albuquerque also faces waste management challenges related to disposal of hazardous wastes from the accelerated shutdown of its Pinellas Plant.

TOTAL FUNDING BY INSTALLATION - ALBUQUERQUE
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Albuquerque Operations Office-New Mexico	17,957	18,373	18,113
Kansas City Plant-Missouri	7,105	7,645	6,067
Los Alamos National Laboratory-New Mexico	81,507	70,463	60,903
Mound Plant-Ohio	12,018	11,530	0
Pantex Plant-Texas	16,099	16,260	12,110
Pinellas Plant-Florida	2,569	2,537	2,269
Sandia National Laboratory-New Mexico	16,285	15,671	15,118
Sandia National Laboratory-California	2,216	2,261	2,159
Waste Isolation Pilot Plant-New Mexico	178,864	174,323	172,700
TOTAL	334,620	319,063	289,439

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OVERVIEW - WASTE MANAGEMENT (DEFENSE) (CONT'D)

Chicago

Chicago Operations Office consists of six Waste Management sites: Argonne National Laboratory-East-Illinois, Argonne National Laboratory-West-Idaho, Ames-Iowa, Brookhaven National Laboratory-New York, Fermi National Accelerator Laboratory-Illinois and Princeton Plasma Physics Laboratory-New Jersey. These facilities are research and development laboratories and the amount of waste they generate is small in comparison to the defense facilities. The non-defense budget funds waste operations at all of these facilities while the defense budget funds a portion of the waste operation at Argonne and Chicago Operations Office.

TOTAL FUNDING BY INSTALLATION - CHICAGO
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Argonne National Laboratory-East-Illinois	300	246	407
Argonne National Laboratory-West-Idaho	315	0	0
Chicago Operations Office-Illinois	1,960	2,364	5,291
TOTAL	2,575	2,610	5,698

Headquarters

Headquarters role is to determine and implement policy. This is done through the establishment of priorities and goals for the program, and then development of baselines to assist in determining progress on a given activity. Subsequently, headquarters assesses the adequacy of progress in order to report to the Congress, interested stakeholders, and the public on the status of the waste management program.

To this end, one of the issues facing headquarters is the management of the Federal Facilities Compliance Act process. The process is intended to raise the level of national discussion on the treatment of mixed waste. The discussions are primarily with the states, but may also include Indian nations, stakeholders and the public. DOE is preparing 48 site treatment plans to address concerns related to treatment of waste at the individual sites. The plans are identifying the waste streams requiring treatment, where the treatment will occur, and which waste streams require development of new technology. As an outcome of the preparation of site treatment plans, the states will issue consent orders based upon both their concurrence with the conclusions of the treatment plans and the outcome of their discussions with other states concerning the equity of the proposed treatment systems. The results of the negotiations in terms of the facilities DOE will be required to build is unknown at present. As a result, headquarters is providing guidance and leadership to the field offices to assist them in successfully completing the site treatment plan process and in concluding reasonable consent orders. States have also requested an analysis of disposal options be made beyond the requirements of the Federal Facilities Compliance Act. Whether states will try to legislate disposal options through this process is unknown. In the past year, the field has released draft site treatment plans. The importance of this effort is to assure the appropriate issues are raised and discussed at the national level.

TOTAL FUNDING BY INSTALLATION - HEADQUARTERS
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Headquarters-Washington, D.C.	162,422	104,524	72,503
TOTAL	162,422	104,524	72,503

Idaho

The Idaho National Engineering Laboratory (INEL) is located in southeastern Idaho and encompasses an area of about 890 square miles (2,300 square kilometers). The Idaho Operations Office manages operations at the Idaho Chemical Processing Plant (ICPP), the Radioactive Waste Management Complex (RWMC), the Waste Reduction Operations Complex (WROC), and at the Test Area North (TAN) for the Waste Management Program. In addition, the Idaho Operations Office is leading the development of appropriate NEPA documentation to allow development of a complex-wide fuel storage program. Interim spent fuel storage at the INEL is a very important mission of Environmental Management. While fuel is currently being stored at many different sites on the INEL, efforts are underway to consolidate the fuel at a single location. A court order agreement between DOE, the Navy, and the State of Idaho lays out milestones DOE must meet to remove fuel from an old facility and transfer it to the more modern storage facility to allow for long-term interim storage. Plans for separate storage facilities for receipt of foreign research spent fuel, if the decision made after completion of the NEPA process is to implement a new program for acceptance of such spent fuel, are also being made at INEL. Storage would be required until the Spent Nuclear Fuel is placed in a final repository, or is otherwise dispositioned.

The ICPP operates several facilities that accomplish the treatment and storage of High-Level Waste (HLW) produced at the ICPP during fuel reprocessing. One such facility is the New Waste Calcining Facility where liquid HLW is converted to a safer, dry granular form known as calcine. The dry material is stored at the ICPP in specifically designed bins contained in concrete vaults. The calciner is undergoing maintenance and is presently scheduled to be restarted in FY 1996. Upgrades to the existing HLW tank farm are in progress to ensure compliance with current environmental regulations. A systems engineering based approach is being employed to develop a long-term strategic plan for the treatment, storage, and eventual disposal of HLW. The HLW Technical Development and Process Verification Program is performing research and development on a waste form and process for the immobilization of HLW calcine generated at the ICPP for repository disposal.

Regulatory compliance is provided for Low-Level Waste (LLW) and TRU facilities at the Radioactive Waste Management Complex (RWMC). In 1994, 2,100 cubic meters of LLW was disposed at the RWMC. The reconfiguration of stored TRU waste and MLLW into RCRA-compliant storage to meet a State of Idaho Consent Order is underway. Since mixed waste poses significant disposal problems under the Land Disposal Restrictions of the Resource Conservation and Recovery Act (RCRA), the management strategy is to re-direct the focus on treatment rather than on storage. Existing and planned treatment facilities have been documented in the Draft Site Treatment Plan. At the Waste Reduction Operations Complex, treatment of LLW takes place at the Waste Experimental Reduction Facility (WERF) via sizing, compaction, and offsite shipment for volume reduction. Operation of the WERF incinerator is currently proposed for FY 1996 to treat mixed low-level waste at the INEL. RCRA compliant storage of hazardous and mixed wastes at the INEL is also performed at the WROC. Other activities are recycling of RCRA hazardous materials and development of non-incinerable treatment processes, and lead management.

TOTAL FUNDING BY INSTALLATION - IDAHO
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Idaho Chemical Processing Plant-Idaho	127,505	117,423	111,708
Idaho National Engineering Laboratory-Idaho	117,686	96,391	89,420
Idaho Operations Office-Idaho	13,525	13,993	13,151
TOTAL	258,716	227,807	214,279

Nevada

The Nevada Operations Office manages the Nevada Test Site where shallow land burial disposal of low-level waste is conducted. The site covers about 1,350 square miles (3,500 square kilometers) and is located about 65 miles (100 kilometers) northwest of Las Vegas, Nevada. The Nevada Test Site was traditionally used to test nuclear explosives.

Nevada has disposed of about 440,000 cubic meters of low-level waste from beginning of operations through 1992. This represents about 14% of all low-level waste disposed through 1992. Nevada's role in disposing of waste has become increasingly significant as the number of sites available for disposal dwindles. In that regard, the role Nevada will play in the disposal efforts is in jeopardy. Recently, the State of Nevada sued DOE over the disposal of off-site low-level waste at Nevada. Without this capability, DOE will be forced to greatly increase use of its only remaining major offsite waste disposal site at Hanford. This capability is needed to assure adequate, safe disposal

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capacity is available to low-level waste generators. At the time of preparation, this litigation is not resolved.

TOTAL FUNDING BY INSTALLATION - NEVADA
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Nevada Operations Office-Nevada	950	1,678	3,059
Nevada Test Site-Nevada	17,955	22,980	21,729
TOTAL	18,905	24,658	24,788

Oakland

The Oakland Office, formerly referred to as the San Francisco Operations Office, manages waste operations at the Laboratory for Energy-Related Health Research (LEHR), Lawrence Berkeley Laboratory (LBL), Lawrence Livermore National Laboratory (LLNL), the Energy Technology Engineering Center (ETEC), and the Stanford Linear Accelerator Center (SLAC). The facilities perform a number of diverse research and development activities, and only Lawrence Livermore National Laboratory is funded from the Defense Appropriation.

Lawrence Livermore is an energy research and weapons development laboratory. Past operations have caused the release and subsequent migration of contaminants including low-level and radioactive waste. Compliant storage and disposal of both legacy and currently generated hazardous waste is Livermore's most pressing problem. These wastes are currently being managed in a compliant manner. Future activities involve keeping this facility in compliance.

Major FY 1996 activities at LLNL include continued design of the newly rebaselined Decontamination and Waste Treatment Facility (DWTF). Construction of DWTF Phase I, site improvements, will be completed and construction of DWTF Phase II, Mixed Waste Management Facility/Liquid Waste Processing Building, will begin. In addition, LLNL will begin long lead procurement for the Mixed Waste Management Facility technology demonstrations.

TOTAL FUNDING BY INSTALLATION - OAKLAND
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Lawrence Livermore National Laboratory-California	49,508	44,088	52,433
Oakland Operations Office-California	7,286	7,661	6,340
TOTAL	56,794	51,749	59,539

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Oak Ridge

The Oak Ridge Operations Office in Oak Ridge, Tennessee, manages the K-25 Site (formerly Oak Ridge Gaseous Diffusion Plant), the Oak Ridge National Laboratory (ORNL), and the Oak Ridge Y-12 Plant for the Waste Management Program under the Oak Ridge Reservation (Reservation). Due to the problems brought on by past activities, the Reservation has a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Federal Facility Agreement and a Federal Facility Compliance Agreement for Resource Conservation and Recovery Act Land Disposal Restriction (RCRA LDR) waste. The major problem affecting the Reservation is the disposal of low-level, mixed low-level, mixed transuranic (TRU), and TRU waste. A significant accomplishment in FY 1996 for Oak Ridge will be the treatment of some mixed low-level waste by private companies, which should reduce costs to DOE. While some low-level waste is shipped to Nevada for disposal, the Reservation is planning to build some facilities for limited onsite disposal of low-level waste. Hazardous waste, of which there is about 10.5 million cubic meters across the Reservation, is treated on-site where possible. A significant issue for Oak Ridge involves establishment of a "de minimis," or below regulatory concern (BRC), level for radioactive contamination. By establishing even a very conservative standard on the amount of radioactive contamination that could be contained by waste, as much as 60% of the existing 57 million kilograms of mixed low-level waste on the ORR could be reclassified as hazardous waste, safely disposed of, and thus save millions of dollars.

K-25 was built in the 1940s to enrich uranium in support of nuclear weapons production. Currently, a majority of buildings are inactive because production activities ceased in 1987. The major waste type associated with K-25 is low-level waste. About 1,500 cubic meters is generated annually and about 7,400 cubic meters is in storage. The other major waste type generated is mixed low-level waste which is treated in the Toxic Substances Control Act (TSCA) incinerator located at the K-25 Site. A major achievement in FY 1994 was the treatment of over 2.4 million kilograms of mixed waste in the TSCA incinerator. This facility provides treatment for mixed waste generated on the Reservation as well as at the Portsmouth and Paducah gaseous diffusion plants. The principal planned accomplishment for FY 1996 will be the conversion of the TSCA incinerator to include soft-solids in addition to liquids.

ORNL was built in the 1940s as a research and development laboratory to conduct applied research in nuclear energy and basic research in selected areas of the physical and life sciences. The tumulous facilities for disposal of certain low-level wastes are located at ORNL. ORNL is the only Oak Ridge installation generating TRU waste. Disposal of this TRU waste is a significant issue.

The Y-12 plant was built in 1943 as part of the Manhattan Project to separate isotopes. That mission ended after World War II. Since then its role has been the manufacture of weapons components. The mission of the plant has shifted to disassembly of stockpiled weapons and the storage and recycling of strategic materials as a result of the end of the Cold War and the downsizing of the weapons complex. The plant is serving as a manufacturing technology center for maintaining the capabilities for safe, secure, reliable, and survivable nuclear weapons systems. The Reservation sanitary and industrial landfills are operated on the Y-12 Plant site. Aside from the hazardous waste discussed earlier, Y-12 generates about 6,000 cubic meters of low-level waste per year and has another 4,600 cubic meters in storage.

TOTAL FUNDING BY INSTALLATION - OAK RIDGE
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
K-25 Site-Tennessee	75,663	71,057	60,472
Oak Ridge National Laboratory-Tennessee	53,360	61,741	53,608
Oak Ridge Operations Office-Tennessee	29,811	34,019	71,669
Y-12 Plant-Tennessee	49,440	44,781	47,772
TOTAL	208,274	211,598	233,521

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Ohio

The Ohio Field Office was established in FY 1995, and manages waste operations for the Mound Plant (formerly under the Albuquerque Operations Office). It also provides funding for the federal staff that support Mound and the West Valley Demonstration Project, which is under the Energy Supply, Research and Development appropriation. In FY 1996 responsibility for the Mound Waste Management Program will be moved from the Albuquerque Field Office to the Ohio Field Office.

TOTAL FUNDING BY INSTALLATION - OHIO
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Mound Plant	0	0	10,386
Ohio Operations	0	0	5,684
TOTAL	0	0	16,070

Richland

The Richland Office manages the Hanford Site which is located on about 560 square miles (1,450 square kilometers) in southeastern Washington. Hanford was among the first facilities constructed by the Manhattan Project. Historically, the emphasis of its operations have been on plutonium production, reactor and processing operations and research activities related to advanced reactors, energy technologies and basic sciences. All production activities ceased in 1989, and today the emphasis is managing the cleanup of the previously generated, stored waste, often referred to as legacy waste.

One of the most visible waste problems, in terms of public concern, is the Hanford High-Level Waste Tanks. Safety concerns and system deficiencies with these tanks is the most pressing problem for the Waste Management Program. The 177 tanks hold about 260,000 cubic meters of high-level waste, which represent about 360 million curies of radioactivity. Release of these materials could present significant hazards to workers the general public or the environment. Therefore, the existing program to remove waste from the tanks on a worst-first basis represents a reasoned effort to properly manage these tanks.

Since some of these tanks are known to have leaked in the past, most of the pumpable liquid has been removed and transferred to double-shell tanks. Completion of this activity is expected in 1996. In the past year, Richland expanded activities related to ferrocyanide mitigation, flammable gas and organic tank programs. Additional instrumentation was added to selected tanks to improve monitoring capabilities, thus reducing risk. Procurement and installation of equipment needed for major maintenance leaks and technology development activities also continued to determine treatment strategies for the high-level waste.

An additional concern at Hanford is the deteriorating spent fuel which is being stored at the K-West Basin. The K-Basin pool, which contains spent fuel, spent fuel sludge, and tritium contaminated water, is thought to be releasing contaminants through seepage from a few construction joints. Near-term remediation activities to reduce water seepage from the basin are underway, and a long-term program to remove the spent fuel from the K-Basins has been initiated.

Although the proposed funding is less than anticipated, we expect to meet our commitments through innovative and more cost effective approaches. One of the approaches under consideration is the privatization of a portion of the tank waste remediation program. Under this approach, the privatized contractor would be responsible for facility design, licensing, financing, construction, operations, and eventual cleanup of the treatment and storage facilities. The contractor would be selected via competitive procurement on the basis of a fixed unit price for treated waste. The Hanford M&O contractor would continue to oversee the tank waste storage, and would continue to retrieve the waste from existing tanks for treatment by the privatized contractor. Discussions with stakeholders, both internal and external to the Department, are underway. Should the decision be made to privatize these services, formal notification would be made to Congress.

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TOTAL FUNDING BY INSTALLATION · RICHLAND
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Battelle Memorial Laboratory·Washington	20,400	23,035	22,934
Richland Operations Office·Washington	77,369	75,894	69,837
Westinghouse Hanford·Washington	866,001	888,932	841,253
TOTAL	963,770	987,861	934,024

Rocky Flats

The Rocky Flats Environmental Technology Site is located 16 miles (25 kilometers) northwest of Denver, Colorado. The facility lies on a site of about 11 square miles (28 square kilometers) and formerly produced nuclear components for nuclear weapons. The new mission statement for Rocky Flats is: Manage waste and materials, cleanup and convert the Rocky Flats Environmental Technology Site to beneficial use in a manner that is safe, environmentally and socially responsible, physically secure and cost effective. The primary waste management activities are waste storage, offsite shipment and disposal of low-level waste and development of treatment capacity for mixed waste.

TOTAL FUNDING BY INSTALLATION · ROCKY FLATS
(in thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Rocky Flats Office·Colorado	110,716	115,087	97,978
TOTAL	110,716	115,087	97,978

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Savannah River

The Savannah River Site (SRS), located near Aiken, South Carolina, produced nuclear materials for national defense purposes. As one of DOE's larger sites, it includes 5 nuclear reactors, 2 chemical separation plants, a fuel and target fabrication facility, a tritium processing facility, 2 high-level waste tank farms, a heavy water rework plant, a uranium fuel reprocessing facility, the Savannah River Technology Center, low level waste storage and disposal facilities, and a high-level waste (HLW) treatment facility: the Defense Waste Processing facility (DWPF). Savannah River has about 126,900 cubic meters of HLW in the form of liquid, sludge and salt cake. This volume represents about 630 million curies of radioactivity. Storage and treatment of HLW requires significant shielding and remote-handling capabilities.

A HLW System Plan has been prepared to outline the strategy for safe and efficient management of SRS HLW. The HLW System Plan integrates management of existing and new facilities to stabilize HLW for final disposal and to empty storage tanks so they can be removed from service. Included in the Plan are operating constraints, planning base issues, assumptions, integrated schedules and contingency analyses. The Plan describes three near-term programs: 1) operation of two HLW evaporators to provide more available volume in the tank farms, 2) support/preparations for DWPF startup testing, and 3) startup of the In-Tank Precipitation (ITP) facility to provide feed for DWPF. Extended Sludge Processing (ESP) will continue to operate and provide feed for DWPF. Facilities are being constructed to remove liquid waste from storage tanks and provide it to ITP or ESP for processing. The ITP will commence operations in FY 1995. During FY 1995, startup testing at DWPF involving the use of simulated wastes will be completed and final preparations made for the start of radioactive operations in early FY 1996. Construction on the Replacement High-Level Waste Evaporator will continue in order to provide a reliable evaporation capability at the Savannah River Site, avoid the need to build new tanks by concentrating dilute wastes, and allow retirement of older evaporator systems. Challenges and uncertainties include the need to test and startup first-of-a-kind facilities, maintaining available waste storage space, increasing the processing rate and managing a highly-complex interdependent system. Additional challenges include completion of the Foreign Research Reactor Spent Fuel Environmental Impact Statement and determine whether to implement a new program to accept spent fuel from foreign research reactors. Provided the Record of Decision supports this action, Savannah River would have to operate storage facilities for receipt of foreign research reactor spent fuel until the Spent Nuclear Fuel is placed in a final repository, or is otherwise dispositioned.

TOTAL FUNDING BY INSTALLATION - SAVANNAH RIVER
(In thousands of dollars)

SITE	FY 1994 APPROP.	FY 1995 CONG. ADJUST.	FY 1996 CONGRESSIONAL
Savannah River Operations Office-South Carolina	646,832	628,090	553,757
TOTAL	646,832	628,090	553,757

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Waste Management (Defense)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Program Management					
Operating Expenses	$ 236,618	$ 202,319	$ -18,813	$ 183,506	$ 140,883
Capital Equipment	136	607	0	607	895
Subtotal, Program Management	$ 236,754	$ 202,926	$ -18,813	$ 184,113	$ 141,778
Facility Operations and Maintenance					
Operating Expenses	$ 1,150,403	$ 1,220,269	$ -48,560	$ 1,171,709	$ 1,120,663
Capital Equipment	90,038	65,549	-1,000	64,549	58,228
Subtotal, Facility Operations and Maintenance	$ 1,240,441	$ 1,285,818	$ -49,560	$ 1,236,258	$ 1,178,891
Former Defense Program Facilities					
Operating Expenses	$ 60,989	$ 63,964	$ -2,542	$ 61,422	$ 139,035
Capital Equipment	900	638	0	638	2,250
Construction	300	0	0	0	29,800
Subtotal, Former Defense Program Facilities	$ 62,189	$ 64,602	$ -2,542	$ 62,060	$ 171,085
New Facilities					
Operating Expenses	$ 429,345	$ 455,090	$ -42,902	$ 412,188	$ 366,703
Capital Equipment	17,488	17,086	0	17,086	24,736
Construction	218,001	319,526	-40,014	279,512	174,601
Subtotal, New Facilities	$ 664,834	$ 791,702	$ -82,916	$ 708,786	$ 566,040
Defense Waste Processing Facility					
Operating Expenses	$ 193,341	$ 194,587	$ -7,033	$ 187,554	$ 173,261
Capital Equipment	0	1,566	- 30	1,536	3,850
Construction	63,510	45,799	-241	45,558	1,540
Subtotal, Defense Waste Processing Facility	$ 256,851	$ 241,952	$ -7,304	$ 234,648	$ 178,651

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LEAD TABLE - Waste Management (Defense) (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Hanford Waste Vitrification Plant (HWVP)					
Operating Expenses	$ 24,300	$ 442	$ 0	$ 442	$ 0
Construction	30,000	0	0	0	0
Subtotal, Hanford Waste Vitrification Plant (HWVP)	$ 54,300	$ 442	$ 0	$ 442	$ 0
Waste Isolation Pilot Plant (WIPP)					
Operating Expenses	$ 171,730	$ 167,611	$ -1,223	$ 166,388	$ 163,770
Capital Equipment	4,217	5,344	0	5,344	1,541
Construction	2,917	2,591	0	2,591	7,389
Subtotal, Waste Isolation Pilot Plant (WIPP)	$ 178,864	$ 175,546	$ -1,223	$ 174,323	$ 172,700
Program Direction					
Operating Expenses	$ 69,259	$ 79,784	$ -7,367	$ 72,417	$ 92,451
Capital Equipment	132	0	0	0	0
Subtotal, Program Direction	$ 69,391	$ 79,784	$ -7,367	$ 72,417	$ 92,451
TOTAL	$ 2,763,624	$ 2,842,772	$ -169,725	$ 2,673,047	$ 2,501,596
Summary					
Operating Expenses	$ 2,335,985	$ 2,384,066	$ -128,440	$ 2,255,626	$ 2,196,766
Capital Equipment	112,911	90,790	-1,030	89,760	91,500
Construction	314,728	367,916	-40,255	327,661	213,330
Total Program	$ 2,763,624	$ 2,842,772	$ -169,725	$ 2,673,047	$ 2,501,596
Staffing (FTEs)	679	1,061	0	1,061	1,035

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Waste Management (Defense)

FY 1995 Appropriation	$ 2,842,772
- Adjustment -	-169,725
FY 1995 Adjusted	$ 2,673,047
- Transfer -	0
FY 1995 Comparable	$ 2,673,047

Program Management

- Provides technical and programmatic support services and general operations support to the Office of Waste Management; reduces radioactive waste acceptance program review/audits of waste generators by Nevada; will support tank waste safety and remediation activities at Chicago; certifies additional waste streams for offsite disposal of Oak Ridge; and continues to execute Vulnerability Action Plans to mitigate environmental impacts due to continued storage of spent nuclear fuel	-32,486
- Waste Minimization/Pollution Prevention reduction reflects strategic emphasis on programs that significantly reduce waste and provide immediate waste minimization benefits	-7,011
- Continues to support AIPs at various sites; decrease is due to transfer of responsibility for Colorado payment to the Office of Facilities and Nuclear Material Stabilization	-2,838

Facility Operations and Maintenance

- Decrease at the Albuquerque complex is due to reduced volume and mix of waste from weapons retirement, reduction in contractual rates for transportation/disposal of regulated wastes, enhanced conduct of operations, and complete repair/replacement of bulk storage tanks at Kansas City, and transfer of Mound Plant to the new Ohio Operations Office	-33,641
- Continues support for management, treatment and disposal of New Brunswick Lab generated waste at Chicago	+161
- Increase provides for incorporation of ICPP Environmental Impact Statement (EIS) under site-wide EIS, implementation of ICPP Spent Fuel/Waste Management Plan, and performs additional Spent Nuclear Fuel Program system integration activities	+3,320
- Requirements at Nevada for increased site characterization, Radiological Performance Assessment, and mixed waste disposal drive increase	+5,077
- Increase due to transfer of the Albuquerque - Mound activities to Ohio	-10,386

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SUMMARY OF CHANGES - Waste Management (Defense) (cont'd)

Facility Operations and Maintenance (cont'd)

· Decrease at Oakland reflects reducing the costs of waste treatment and disposal activities	-2,673
· Decrease at the Oak Ridge Reservation is due to system efficiencies such as increasing solid waste throughout at TSCA incinerator, continuous waste tracking safety analysis upgrades; and operating the filter test facility	-2,433
· Decrease at Richland is tied to resolution of Tank Waste Remediation System Priority 1 safety issues such as flammable gas, high-heat tanks, ferrocyanide organics and criticality	-13,004
· Decrease in funding at Rocky Flats is related to limited shipping of solid waste for offsite disposal and completion of some capital equipment procurement; continues storage and certification for solid waste at a lower cost	-23,437
· Decrease at Savannah River is related to initial operation of the Consolidated Incineration Facility and new Solvent Storage Tanks; startup New Waste Transfer Facility	-1,123

Former Defense Program Facilities

· B-Plant/WESF - The B-Plant continues to provide safe storage for cesium/strontium works and completes K-3 duct work cleanout	+3,739
· K-Basins - Continues the fuel and sludge containment in the K-East basin, which reduces risk of release to basin or environment; completes Hanford SNF management EIS; completes conceptual design of SNF storage/conditioning facility and completes construction of essential systems upgrades at K-Basins	+105,286

New Facilities

· Increase at Albuquerque is driven by award of construction contract for Los Alamos Mixed Waste Receiving and Storage Facility and High Explosive Wastewater Treatment Plant	+5,900
· Decrease supports completion of the advance conceptual design for the calcine retrieval from bin #1 at Idaho and performs new facilities planning based on EIS Record of Decision concerning new high-level waste tanks; HLLW project will remain in standby; will pursue privatization of mixed waste treatment at INEL	-8,352
· Decrease at Nevada reflects construction completion and turn-over for operation of Liquid Waste Treatment System	-3,562
· Continues design of the Decontamination and Waste Treatment Facility (DWTF) Subproject A, Main Facility, and completes the DWTF Subproject B, at Livermore and continues design and begins long-lead fabrication activities for the Mixed Waste Management Facility Pilot Plant	+11,008
· Net increase at Oak Ridge construction is tied to Regulatory and FFCA drivers, a Mixed Waste Treatment Facility, privatization of some mixed waste treatment, and commercial/offsite disposal of selected waste streams	+17,054

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SUMMARY OF CHANGES - Waste Management (Defense) (cont'd)

New Facilities (cont'd)	
- Decrease is driven largely by completion of Tank Farm Improvement and safety projects at Richland; AY/AZ upgrades, continues permitting for the 101-AZ project; completes construction and permitting for the C-106 project; completes conceptual design for the LLW pretreatment facility; stops construction on the 222-S Laboratory Radioactive Waste Transfer Line and completes design of the 219-S Waste Handling Facility double containment upgrade and maintains Grout Treatment Facility on cold standby condition .	-152,901
- Increase at Rocky Flats supports the upgrade to the Liquid Waste Treatment Facility and Sludge Immobilization System; obtains permits and begins operation of Cell 1 of the new Sanitary Landfill	+5,324
- Decrease at Savannah River is related to completion of the HLW Evaporator and the Operational Readiness Review and trial burns for the Consolidated Incineration Facility	-17,217
Defense Waste Processing Facility	
- Decrease is largely related to construction completion of the Defense Waste Processing Facility; Vitrification and Late Wash startup test programs concludes; completed design proposal for SPC Benzene Abatement Project and completes any remaining emergent work issues and project closure	-55,997
Hanford Waste Vitrification Plant (HWVP)	
- Decrease reflects delay of project pending reactivation of HWVP	-442
Waste Isolation Pilot Plant (WIPP)	
- Continue full compliance with environmental safety, health, as well as safeguards and security requirements; provides on a limited basis full capacity contact-handled systems studies; and continues WIPP transportation exercises	-1,623
Program Direction	
- Provides an escalation increase for base Federal FTEs at Headquarters	+1,500
- Increases funding for Operations Offices to support 729 base FTEs	+18,534
FY 1996 CONGRESSIONAL Budget Request	$ 2,501,596

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Waste Management (Defense)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Mound Plant	$ 12,018	$ 11,530	$ 0	$ 11,530	$ 10,386
Pantex Plant	16,099	14,260	0	16,260	12,110
Los Alamos National Laboratory	81,507	70,463	0	70,463	60,903
Kansas City Plant	7,105	7,645	0	7,645	6,067
Waste Isolation Pilot Plant	178,864	174,323	0	174,323	172,700
Pinellas Plant	2,569	2,537	0	2,537	2,269
Sandia National Laboratories	18,501	17,932	0	17,932	17,277
Albuquerque Operations Office	17,957	18,373	0	18,373	23,797
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 334,620	$ 319,063	$ 0	$ 319,063	$ 305,509
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 300	$ 246	$ 0	$ 246	$ 407
Argonne National Lab (West)	315	0	0	0	0
Chicago Operations Office	1,960	2,364	0	2,364	5,291
Subtotal, CHICAGO OPERATIONS OFFICE	$ 2,575	$ 2,610	$ 0	$ 2,610	$ 5,698
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 112,246	$ 92,277	$ 0	$ 92,277	$ 87,460
Idaho Operations Office	18,965	23,607	0	23,607	15,111
Idaho Chemical Processing Plant	127,505	111,923	0	111,923	111,708
Subtotal, IDAHO OPERATIONS OFFICE	$ 258,716	$ 227,807	$ 0	$ 227,807	$ 214,279
NEVADA OPERATIONS OFFICE					
Nevada Test Site	$ 14,069	$ 17,019	$ 0	$ 17,019	$ 18,534
Nevada Operations Office	4,836	7,639	0	7,639	6,254
Subtotal, NEVADA OPERATIONS OFFICE	$ 18,905	$ 24,658	$ 0	$ 24,658	$ 24,788

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FIELD OFFICE FUNDING BY SITE - Waste Management (Defense) (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
OAK RIDGE OPERATIONS OFFICE					
K-25 Site	$ 75,663	$ 71,057	$ 0	$ 71,057	$ 60,472
Oak Ridge National Lab	53,360	61,741	0	61,741	52,008
Y-12 Plant	49,440	44,781	0	44,781	47,772
Oak Ridge Operations Office	29,811	34,019	0	34,019	73,269
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 208,274	$ 211,598	$ 0	$ 211,598	$ 233,521
ROCKY FLATS OFFICE					
Rocky Flats Plant	$ 110,716	$ 115,087	$ 0	$ 115,087	$ 97,978
RICHLAND OPERATIONS OFFICE					
Hanford Site	$ 868,517	$ 946,599	$ 0	$ 946,599	$ 889,719
Richland Operations Office	95,253	41,262	0	41,262	44,305
Subtotal, RICHLAND OPERATIONS OFFICE	$ 963,770	$ 987,861	$ 0	$ 987,861	$ 934,024
OAKLAND OPERATIONS OFFICE					
Oakland Operations Office	$ 7,786	$ 8,561	$ 0	$ 8,561	$ 8,016
Lawrence Livermore National Lab	49,008	43,188	0	43,188	51,523
Subtotal, OAKLAND OPERATIONS OFFICE	$ 56,794	$ 51,749	$ 0	$ 51,749	$ 59,539
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Site	$ 256,851	$ 234,648	$ 0	$ 234,648	$ 178,651
Savannah River Operations Office	389,981	393,442	0	393,442	375,106
Subtotal, SAVANNAH RIVER OPERATIONS OFFICE	$ 646,832	$ 628,090	$ 0	$ 628,090	$ 553,757
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 162,422	$ 104,524	$ 0	$ 104,524	$ 72,503
ALL OTHER	$ 0	$ 8,925	$ -8,925	$ 0	$ 0
TOTAL	$ 2,763,624	$ 2,681,972	$ -8,925	$ 2,673,047	$ 2,501,596

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

1. Preface: Program Management

The regulatory environment in which the Waste Management Program works involves a considerable amount of oversight and review from regulatory and other federal, state or local agencies to assure DOE meets regulatory expectations. This portion of the budget provides for support and oversight of the Waste Management Program to help assure these expectations are met. It includes strategic and long-range planning, administrative and technical support services such as office mail and automated equipment, and provides for contractor expertise on Safety and Environmental documentation preparation and review. Also included here is a request for funding to address the requirements of the Federal Facility Compliance Act. The Waste Minimization category includes support for the DOE-wide and Operations Office crosscutting waste minimization programs and those activities in the defense Waste Management Program which are aimed at: reducing or eliminating the amount of waste generated; reducing the toxicity of waste produced and recycling potential waste materials; to reduce costs of waste management; improve worker safety and environmental quality; and comply with applicable Federal and State regulations. Agreements-In-Principle and Payments to Local Communities, which fund agreements with States and Indian Nations, are similar in that both categories fund negotiated agreements with external groups for their oversight of the DOE Waste Management program at specified sites.

The near-term goal is to have sufficient support and oversight so that no environmental, health or safety non-compliances occur. The benefits include adequate support for management control, planning, cost reviews and identification of environment, safety or health issues which can be dealt with in a reasoned and structured manner. It also assists and builds DOE's credibility with states and Indian Tribes whose oversight activities are funded through direct grants. Finally, support of the waste minimization efforts is one of the few ways DOE can actually reduce future work loads and save money by preventing or limiting the generation of new waste.

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II. A. Summary Table: Program Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Program Control/Support	$ 204,257	$ 138,876	$ 106,390	$ -32,486
Waste Minimization	$ 20,606	$ 33,918	$ 26,907	$ -7,011
Agreements-In-Principle (AIP)	$ 11,891	$ 11,319	$ 8,481	$ -2,838
Payments to Local Communities	0	0	0	0
Total, Program Management	$ 236,754	$ 184,113	$ 141,778	$ -42,335

II. B. Laboratory and Facility Funding Table: Program Management

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 11,538	$ 10,473	$ 10,813	$ 340
Chicago Operations Office	762	1,107	3,000	1,893
Washington Headquarters	148,022	89,524	56,003	-33,521
Idaho Operations Office	5,640	9,614	1,960	-7,654
Nevada Operations Office	3,886	5,961	4,749	-1,212
Oakland Operations Office	3,986	4,563	3,176	-1,387
Oak Ridge Operations Office	20,316	22,669	29,051	6,382
Richland Operations Office	26,382	25,629	19,700	-5,929
Rocky Flats Plant	4,397	4,471	3,675	-796
Savannah River Operations Office	12,025	10,102	9,651	-451
Total, Program Management	$ 236,754	$ 184,113	$ 141,778	$ -42,335

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Management			
Program Control/Support			
Operating	ALBUQUERQUE Provided technical and programmatic support services and general operations support to the Waste Management Division. Services include: technical expertise on general project and program activities, budget and baselining support, site treatment plan (STP) activities, strategic planning, waste minimization and pollution prevention. In addition, site specific training, computer enhancements, and technical support will be provided to maintain an appropriate level of administrative and technical oversight for installation activities. Performed technical and management studies, developed plans and schedules, prepared cost estimates, database development, supported Native American funding agreements, public participation, training courses, performed risk analysis and implemented cost and schedule control systems. Also assisted in updating the WIPP Disposal Plan. ($4,746)	ALBUQUERQUE Continue technical and programmatic support which includes: services for STP development oversight, waste minimization and pollution prevention. Funding is decreased because support for computer enhancements and strategic planning should decrease. Performed technical and management studies, developed plans and schedules, prepared cost estimates, database development, supported Native American funding agreements, public participation, training courses, performed risk analysis and implemented cost and schedule control systems. Also assisted in updating the WIPP Disposal Plan. ($3,745)	ALBUQUERQUE Will continue providing technical and programmatic support services and general operations support to the Waste Management Division. Services include: technical expertise on general project and program activities, budget and baselining support, STP activities, performance of Hanford tank safety overview, strategic planning, waste minimization and pollution prevention. Funding increases to provide for additional support for project implementation, primarily in the areas of mixed waste treatment capacity development, waste minimization and pollution prevention. Perform technical and management studies, develop plans and schedules, prepare cost estimates, database development, support Native American funding agreements, public participation, training courses, perform risk analysis and implement cost and schedule control systems. Also, will assist in updating the WIPP Disposal Plan. ($5,997)

III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	CHICAGO Supported programmatic reporting, preparation, and submittal of activity data sheets. In addition, developed cost estimating guidance to aid in Activity Data Sheet development, and developed Chicago quality assurance program plans required to meet DOE Orders and guidance. ($680)	CHICAGO Support programmatic reporting, preparation and submittal of Activity Data Sheets. In addition, prepare and review development of the Program Execution Guidance and Current Year Work Plans. ($718)	CHICAGO Prior year activities will be funded in the Non-Defense budget. The FY 1996 funding will support tank waste safety and remediation activities including resolution of safety issues, Tank Advisory Panel (TAP), systems engineering, and cross site tank safety technical support as directed by Headquarters. ($3,000)
	NEVADA Performed program and project management, coordination, technical, legal and administrative support for management of waste on the Nevada Test Site (NTS) including the performance measurement system, progress tracking system, activity data sheets, value engineering, etc. Also performed radioactive waste acceptance program which included review and site audits (against the NTS waste acceptance criteria) of offsite DOE facility requests for radioactive waste disposal at the NTS. ($3,300)	NEVADA Provide program and project management and radioactive waste acceptance program activities. Increased funding is for waste verification analysis, public participation activities, Federal Facilities Compliance Act activities, and safety and health assessments. ($5,192)	NEVADA Will provide program and project management and reduced radioactive waste acceptance program activities. ($4,128)
	OAKLAND Provided limited support for contractor services to assist all of the laboratories in specialized technical areas not required on a full-time basis, including cost validation, database system development, budget forecasting, development of Site Specific Plans, technical evaluations, public meetings, and analytical sampling and testing. Also began preparation of Waste Management baseline and implementation of Cost	OAKLAND Continue to provide limited support for contractor services to assist all of the laboratories in specialized technical areas not required on a full time basis, including cost validation, database system development, budget forecasting, development of Site Specific Plans, technical evaluations, public meetings, and analytical sampling and testing. Also continue preparation of Waste Management baseline and implementation	OAKLAND Will continue prior year activities for Defense Waste Management at Lawrence Livermore National Laboratory which include cost validation, database system development, budget forecasting, technical evaluations, public meetings, and analytical sampling and testing. Also continue preparation of Waste Management baseline and implementation of cost Quality Management System. The decrease is due to this activity being targeted for productivity savings.

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Quality Management Systems. ($1,486)	of Cost Quality Management Systems. ($1,663)	($766)
	OAK RIDGE Provided project management, coordination, technical, legal, and administrative support services required for management of waste on the Oak Ridge Reservation (ORR). Performed strategic and long-range planning and assessments and provided guidance, oversight, and coordination for waste management. Certified and characterized waste streams generated on the ORR sites. Developed the No Rad-Added Program for shipment of hazardous waste offsite. Continued activities to meet Land Disposal Restriction Federal Facility Compliance Agreement (LDR FFCA) requirements. ($19,816)	OAK RIDGE Continue providing administrative support and planning for waste management and activities to meet the LDR FFCA. Commence quality assurance and self-assessment programs. Certify waste streams for offsite disposal. Implement the No Rad-Added Program for the shipment of hazardous waste. ($21,819)	OAK RIDGE Will continue LDR FFCA activities, planning and administrative and other support, and will certify additional waste streams for offsite disposal. Reservation support includes management of treatment and/or disposal of 1.35 million pounds of low-level radioactive waste, 1.2 million pounds of hazardous waste, 300K pounds of mixed waste and 1.1 million pounds of radioactively contaminated scrap metal. ($24,286)
	RICHLAND WASTE OPERATIONS Provided for General Support Services Contractor (GSSC) support to assist Richland in directing and overseeing Hanford waste management programs to ensure compliance with applicable national, state, and local regulations. Transferred the support of downwinder litigation, GSSC support to Richland matrix organizations, ongoing air emissions, and monitoring to the Office of Facility Transition and Management.	RICHLAND WASTE OPERATIONS Provide for General Support Services Contractor (GSSC) support to assist Richland in directing and overseeing Hanford waste management programs to ensure compliance with applicable national, state, and local regulations.	RICHLAND WASTE OPERATIONS Will provide for GSSC support to assist Richland in directing and overseeing Hanford waste management programs to ensure compliance with applicable national, state and local regulations.
	Continued monitoring Tri-Party Agreement (TPA) milestone achievement and supports TPA management activities.	Continue to monitor achievement of TPA milestones and support TPA management activities. Continue to provide administration, control, planning, warehousing, and effect changes in inventory levels for Hanford Site	No activity.

2105

III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)		Inventories at the minimum required levels to comply with the overall planned objective to reduce defense mission categories and set up new Waste Management mission categories per DOE Order 100.3A. Inventory changes include coal, essential material/chemicals, general supplies and computer hardware/software, fuels, radio equipment, telecommunication spare parts and process spare parts primarily for tank farms, powerhouse, 222-S Lab, and B-Plant.	
	Continued management of budget planning and multi-year program planning, Progress Tracking System (PTS) and Hanford Integrated Planning Process. Implemented site-wide risk-based priority system.	Continue management of budget planning and multi-year program planning, Progress Tracking System (PTS) and Hanford Integrated Planning Process.	Will support planning integration activities including; integrated risk assessment, baseline control/integration management performacne reporting, multi-year program planning, Hanford Mission Planning, risk management, systems engineering, and five-year plan.
	Developed site-wide pollution prevention program, as well as material control practices and tracking systems. Provided program management and financial administration to the Hanford Environmental Management Program, prepared plans and reports to meet regulatory requirements. ($26,382)	Continue prior year activities and provide site-wide coordination activities for Clean Air Act compliance. Develop RCRA facility compliance files for Treatment, Storage and Disposal facilities and support Clean Air Act implementation. Develop a site-wide NEPA-EIS. ($24,705)	Will support NEPA/Natural Resource Damage Asessment Coordination, Regulatory Field Support, Air and Water Permitting, environmental reporting, Tri-Party Agreement integration, RCRA Compliance, pollution prevention, productivity commitment, and program adjustments. ($19,134)

2106

III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	SAVANNAH RIVER Provided technical and programmatic support for evaluating operations, reducing risk and achieving compliance. Established database for monitoring environmental impacts from Defense Waste Processing Facility (DWPF) operation. ($10,825)	SAVANNAH RIVER Provide technical assessments supporting program oversight. Conduct engineering surveys and terrain model development. Provide support for Operational Readiness Reviews (ORR) for DWPF and related facilities in order to achieve required startup dates. Provide support in preparing and issuing the DWPF final Supplemental Environmental Impact Statement ($8,903)	SAVANNAH RIVER Will provide analytic support to optimize operations and maintain safety standards. Will support final startup activities for DWPF, and will perform environmental monitoring to confirm performance. ($9,001)
	HEADQUARTERS Initiated cesium capsule recovery activities from Denver with start of physical shipments from Colorado to Richland, Washington. Funding for activity transferred to Richland Operations Office, which will budget in the future. Supported technical expertise and technical products in the areas of waste treatment, storage, and disposal under RCRA. Assisted with funding of major conferences in the field such as Waste Management 94 and the National Technical Work Group (NTW) on Mixed Waste Incineration; funded monitoring of tritium migration efforts at Area 5 in Nevada; funded Waste Management's portion of the operation of the Radiation Shielding Information Center; and provided funding for Inhalation Toxicology Research Institutes (ITRI) specific waste management needs. Funded the Offsite Waste Program providing for the management of waste for which DOE is legally responsible but which is not generated at a current DOE site. This included waste which DOE accepts for public health and safety reasons from NRC licensees, materials which were	HEADQUARTERS Continue support of NTW Mixed Waste Incineration Conference. Plan support of Thermal Treatment Training Course at Oak Ridge, support for IRP (MOU) with EPA to resolve DOE issues associated with incineration, and support to develop a budget prioritization system. Support the Offsite Waste Program which provides for the management of waste for which DOE is legally responsible but which is not generated at a current DOE site. This includes waste which DOE accepts for public health and safety reasons from NRC licensees, materials which were given or leased to public institutions (e.g., universities) by DOE or former DOE entities and which are no longer needed, and special materials which are in the possession of other Government agencies. Funding will also be sent to Idaho for the Private Sector Working Group (Idaho has the lead on the privatization effort for Waste Management). Funding to Argonne National Laboratory for the New Start line item construction prioritization process. Funding to increase support at the Nevada Test Site for acceptance	HEADQUARTERS Will continue support of the Offsite Waste Program issues such as: reimbursing Richland, Albuquerque, and Oak Ridge for storage of materials from responding to an emergency request from NRC; and packaging, shipment to Argonne-West, and storage of 216 cubic feet of DOE owned sodium currently stored at Renselaer Polytechnic Institute. Will continue to support the NTW on Mixed Waste Incineration conference. Will continue support for IRP (MOU) with EPA to resolve DOE issues associated with incineration. Will continue support to Argonne National Laboratory for the New Start line item construction prioritization process. Will continue support to Idaho for the Private Sector Working Group. ($1,000)

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	given or leased to public institutions (e.g., universities) by DOE or former DOE entities and which are no longer needed, and special materials which are in the possession of other Government agencies. ($18,445)	of waste from waste generators. ($3,000)	
	Provided for general support services and contractor expertise to assist in development of program policy, strategy, priorities, goals and baselines for the Waste Management Program. ($24,273)	Undistributed Congressional reductions and Productivity Savings to other Headquarters activities make it appear as if only $9.6M is available for this effort at this time. When the reductions are distributed, the available funding will continue to provide support services at the same level as the prior year. ($9,644)	Will continue to provide the same level-of-effort for support services as in prior years. ($25,003)
	Continued development of strategic/long-range plans with analysis of system alternatives for managing major waste types generated by DOE activities. Instituted improvements in the Waste Management Information System as allowed by funding. Issued the 1993 IDB report Completed analysis of Waste Management alternatives for the draft EM PEIS, and issued draft for review. Continued revision of DOE Order 5820 2A. Initiate five LLW performance assessment reviews. Initiated assessments of technology needs to support waste management operations Continued Red Team reviews of major Waste Management projects as required ($49,604)	Complete development of the first set of strategic/long-range plans with analysis of system alternatives for managing major waste types generated by DOE activities. Institute improvements in the Waste Management Information System as allowed by funding. Issue the 1994 IDB report. Respond to comments and evaluate Waste Management alternatives for the draft EM PEIS. Issue update of DOE Order 5820.2a: carryout two LLW performance assessment reviews. Defer support for Red Team reviews of major Waste Management projects. Participate in international waste management exchanges, conferences and projects. ($30,430)	Will complete development of the first set of strategic/long-range plans with analysis of system alternatives for managing major waste types generated by DOE activities. Will institute improvements in the Waste Management Information System as allowed by funding. Will issue the 1994 IDB report. Will respond to comments and evaluate Waste Management alternatives for the draft EM PEIS. Will issue update of DOE Order 5820.2a: carryout two LLW performance assessment reviews. Will defer support for Red Team reviews of major Waste Management projects. Participate in international waste management exchanges, conferences and projects. ($13,000)

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Continued support to tank waste safety and remediation activities including resolution of safety issues, Tank Advisory Panel (TAP), systems engineering, waste characterization support, cross site tank safety technical support, and national lab support and integration. ($13,100)	Continue support to tank waste safety and remediation activities including resolution of safety issues, tank Advisory Panel (TAP), systems engineering, cross-site tank safety technical support, support and integration, and privitization activities. ($12,800)	Headquarters will direct the field to perform the following tasks using existing funds at the site: will continue support to tank waste safety and remediation activities including resolution of safety issues, Tank Advisory Panel (TAP), systems engineering, cross-site tank safety technical support, and national lab support and integration. ($0)
	The Office of Spent Nuclear Fuel, along with the Office of Environment and Health, developed Vulnerability Action Plans to reduce the potential for release of radioactive materials to the environment and to reduce radiation exposure to workers or the public. The Office of Spent Nuclear Fuel Vulnerability Action Plans specifically identify corrective actions for spent fuel storage facilities which will result in improvements and upgrades necessary to protect workers, the public and the environment. Many of the activities for this initiative was funded from within available resources. Initiated technology development for fuel and sludge, continued surveillance and maintenance operations of K-Basins. ($28,000)	Continue to execute Vulnerability Action Plans to mitigate environmental impacts due to the storage of spent nuclear fuels. Initiate development of Hanford SNF management EIS, initiate fuel and sludge characterization, initiate conceptual design of SNF storage/conditioning facility, continue technology development for conditioning SNF and sludge. Initiate prepackaging demonstration for fuel and sludge at K Basin. Continue surveillance and maintenance operations at K-Basin. ($13,500)	Headquarters will direct the field to perform the following tasks using existing funds at the field: will continue to execute Vulnerability Action Plans to mitigate environmental impacts due to the storage of spent nuclear fuels. Will complete Hanford SNF management EIS; will continue fuel and sludge characterization; will complete conceptual design of SNF storage/conditioning facility; will continue technology development for conditioning SNF and sludge. Will continue containment of SNF and sludge at K-Basins; will continue surveillance and maintenance operations at K-Basins; will complete construction of essential systems upgrades at K-Basins. ($0)

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	FEDERAL FACILITY COMPLIANCE ACT IMPLEMENTATION	FEDERAL FACILITY COMPLIANCE ACT IMPLEMENTATION	FEDERAL FACILITY COMPLIANCE ACT IMPLEMENTATION
	Since the FFCAct legislation was passed late in the budget process, HQ requested funding for the Operations Office to comply with administration requirements imposed on DOE by the FFCAct. Requested funding is being distributed between HQs and the Operations Office as needs are validated. Also, develop progress reports required by the FFCAct.	Supports department-level policy guidance and coordination, and integration required to comply with the FFCAct discussed in the FY 1994 Congressional budget narrative, will be requested in the appropriate Waste Management Operations Office budgets.	Will support department-level policy guidance and coordination, and integration required to comply with the FFCAct discussed in the FY 1994 Congressional budget narrative, will be requested in the appropriate Waste Management Operations Office budgets.
	funds are being used to fund National Governor's Association (NGA) as well as begin administrative activities to establish cooperative agreement for next year.	Continue cooperative agreement activities with States and Indian Tribes through NGA and others.	Continue cooperative agreement activities with States and Indian Tribes through NGA and others.
	MIXED WASTE INVENTORY REPORT	MIXED WASTE INVENTORY REPORT	MIXED WASTE INVENTORY REPORT
	Respond, as required by the FFCAct, to requests by EPA, the States and tribes for information on mixed waste characterisstics, quantities, etc.	Funding will be used to respond to requests for information and generate an annual update to the inventory report.	Funding will be used to respond to requests for information and generate an annual update to the inventory report.
	SITE TREATMENT PLANS (STP)	SITE TREATMENT PLANS (STP)	SITE TREATMENT PLANS (STP)
	Coordinated development and submission of 48 draft STPs to states hosting DOE mixed waste facilities or EPA.	Coordinate development and submission of the 48 STPs. Funding for preparation of individual prepared STPs will be requested separately by the appropriate Operations Office.	Will coordinate revision and submission of the 48 STPs. Funding for revision of the individual STPs will be requested separately by the appropriate Operations Office.
	FEDERAL FACILITY COMPLIANCE ACT COST REIMBURSEMENTS	FEDERAL FACILITY COMPLIANCE ACT COST REIMBURSEMENTS	FEDERAL FACILITY COMPLIANCE ACT COST REIMBURSEMENTS
	As required by Section 102 of the FFCAct, funds were provided through NGA to states for nondiscrimatory changes associated with review of the annual updates to the mixed waste inventory	Continue prior year activities for draft and proposed site treatment plans.	Will continue prior year activities for final site treatment plans

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III. Program Management (Cont'd):
Program Control/Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	report, review of draft SIPs and participation in equity discussions with States. As stipulated by Section 104 of the FFCAct, funds were provided to reimburse EPA for costs incurred during required inspection of DOE facilities. ($3,500)	Continue prior year activities. ($2,150)	Will continue prior year activities. ($1,000)
	$204,157	$138,269	$106,315
Capital Equipment	The Program Control/Support section of the budget provides for capital equipment purchases to support the activities described above. ($100)	The Program Control/Support section of the budget provides for capital equipment purchases to support the activities described above. ($607)	The Program Control/Support section of the budget provides for capital equipment purchases to support the activities described above. ($75)
	$100	$607	$75
Subtotal, Program Control/Support	$204,257	$138,876	$106,390
Waste Minimization			
Operating	ALBUQUERQUE Included Los Alamos National Laboratory (LANL), Sandia National Laboratories New Mexico (SNL/NM), Sandia National Laboratories-California (SNL/CA), Kansas City Plant, Mound Plant, Pantex and Pinellas. Continued management of Waste Minimization program including training, recycling, procurement, inventory control, spill prevention, solvent substitution, and waste segregation. Prepared process waste assessments (PWA) and implementation of waste minimization into site operating procedures. ($3,396)	ALBUQUERQUE Increase waste minimization review of procurements, process changes, and goal setting. Continue waste minimization activities at all Albuquerque sites. ($3,214)	ALBUQUERQUE Will continue waste minimization activities at all Albuquerque sites focusing on maintaining an adequate waste minimization infrastructure, employee involvement, waste tracking and reporting, site wide source-reduction and recycling programs, technical assistance for Pollution Prevention Opportunity Assessments, information and technology exchange and program evaluation activities. ($2,000)

2111

III. Program Management (Cont'd):
Waste Minimization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	CHICAGO Developed sitewide waste minimization and pollution prevention plans. Identified new opportunities and technologies for minimization to meet waste minimization goals. ($82)	CHICAGO Continue development of Waste Minimization Programs in accordance with DOE Order 5400.1. In addition, will develop and deliver information exchange and training seminars on Waste Minimization. ($389)	CHICAGO Activity will be funded in the non-defense waste management segment of Chicago's budget beginning in FY 1996. ($0)
	HEADQUARTERS Headquarters coordinated and developed a DOE-wide Waste Minimization (WMin) and pollution prevention effort, carried out WMin mandates (regulatory, Executive Order, DOE Order) assigned to Environmental Managmeent (EM), and implemented the WMin Crosscut Plan where responsible. Issued the first annual report on the DOE WMin Programs, and instituted an effective DOE materials recycling and affirmative procurement program at all DOE sites. Conducted workshops and training programs for field personnel. Supported line organizations, including EM, in initiating their WMin programs; process waste assessments, goal setting, and technology transfer. Began appraisals of site WMin programs. Initiated development of a WMin/Program Plan for the Waste Management Programs. ($11,100)	HEADQUARTERS Continue prior year activities. The major new element for 1995 is to transition from Headquarters planning to operations office implementation and control of waste minimization programs. This is taking place by increased federal field staff and increased funding from the Headquarters account to (1) develop more aggressive site wide programs, and (2) implement waste minimization projects specific to Environmental Management internal operations. ($22,500)	HEADQUARTERS Program will focus on activities that immediately minimize waste and reduce other areas such as planning or reporting. Responsibility for maintaining the Environmental Management generator waste minimization program, started in FY 1995 is transferred to waste management operations. The FY 1996 Headquarters program will emphasize reducing waste management costs through promoting new cost effective pollution prevention program as demonstrated by DOE's high return on investment program. ($16,000)

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III. Program Management (Cont'd):
Waste Minimization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	IDAHO Continued activities to assist all INEL waste generators in minimizing their waste streams by identifying, developing, and providing organized WMin systems and programs. Provided pollution prevention training to specific groups. Published the WMin and Pollution Awareness Plan and updated the Pollution Prevention Program Management Plan. ($1,770)	IDAHO Continues Waste Minimization/Pollution Prevention activities. Supports feasibility studies for waste to energy systems and engineering assistance to the generators to aid in eliminating difficult waste streams. ($2,154)	IDAHO Waste Minimization activities are integrated into day to-day activities at specific facilities at the Idaho National Engineering laboratory and will not require funding in FY 1996. ($0)
	NEVADA Developed and implemented a waste minimization program for all Nevada Field Office facilities (including: hazardous waste reduction, technology transfer, recycling programs, and employee awareness). ($550)	NEVADA Continue prior year activities, including waste tracking and data reports as required by the State. Implement the waste certification program. ($769)	NEVADA Will continue prior year activities at reduced level. ($621)
	OAKLAND Provided limited support to maintain Waste Minimization programs at Lawrence Livermore National Laboratory (LLNL) and additional support to enhance Solid Waste Reduction Program. Also, submitted the Comprehensive Alternative Cleaner Testing Program Report to DOE, donated over 6,700 gallons of transformer diesel oil to the State of Oregon for fuel, coordinated the recycling of over 1,200 metric tons of material (e.g., scrap metal, wood pallets, tires, cardboard, office supplies, furniture, and equipment, and established a contract to refine (onsite) 17,000 gallons of contaminated diesel fuel from the Tank Upgrade Projects (TUP) for reuse by the motor pool. ($500)	OAKLAND Continue to maintain Waste Minimization program at LLNL. Also plan to submit DOE Annual Waste Minimization/generation Report for FY 1993, initiate special FY 1995 WMin/Pollution Prevention Projects, submit Executive Order 12873 Affirmative Procurement Report, submit proposals to Headquarters for High Return on Investment Projects, submit California SB 14 Source Reduction and Recycling Report, continue implementation of the WMin/Pollution Prevention Plans. ($910)	OAKLAND Will continue prior year activities to maintain Waste Minimization program at LLNL in compliance with Waste Minimization reporting and documentation requirements specified by Federal, State, and Departmental regulations/requirements. ($910)

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III. Program Management (Cont'd):
Waste Minimization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	OAK RIDGE Continued waste minimization/pollution prevention initiatives for waste operations facilities, submitted state required annual waste reduction reports. Developed waste generators funding systems. Continued process waste assessments to identify waste minimization opportunities. ($500)	OAK RIDGE Begin waste tracking and data reports as required by the state. Conduct pollution prevention opportunity assessments on selected waste streams to identify areas where waste generation could be reduced. Implement selected pollution prevention projects and begin use of an automated reporting system. Implement waste generators funding system. Complete second program of self evaluation. ($450)	OAK RIDGE Will track waste and provide data reports as required by the state. Will develop quantitative goals for waste minimization and activity schedules; update employee training on waste minimization and pollution prevention activities and conduct awareness programs. Will upgrade a treatment facility to reduce mixed waste sludge residues by 95,000 gallons per year with a cost avoidance of $8,700K in associated waste management cost. ($3,870)
	RICHLAND No activity. ($0)	RICHLAND Support ongoing waste minimization effort through work planning, employee training and awareness, feasibility studies/cost benefit analysis, assessments, and performance measurement and reporting. ($817)	RICHLAND Will continue prior year activities. ($566)
	ROCKY FLATS Continued programmatic and administrative functions of the Waste Minimization/Pollution Prevention Program. The regulatory requirements which drove this Program include: the Resource Conservation and Recovery Act (RCRA) requirements for the reduction of volume and toxicity of generated waste (40 CFR 264.73); Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements"; Executive Order 12873, "Federal Acquisition, Recycling and Waste Prevention"; the State of Colorado RCRA Permit; and DOE Orders 5400.1, 5400.3 and 5820.2A. Objectives of program are to reduce the	ROCKY FLATS Continue programmatic and administrative functions of the Waste Minimization/Pollution Prevention Program. In addition, the implementation portion of the waste minimization program becomes a waste management responsibility, transferred from the Office of Facilities and Nuclear Material Stabilization. Activities include: maintaining formal policies and program plans, employee education and Pollution Prevention Awareness programs, performance and oversight of waste minimization assessments, and maintenance of records of waste generation and waste reduction/prevention. ($1,626)	ROCKY FLATS Will continue programmatic, implementation, and administrative functions of the Waste Minimization/Pollution Prevention Program. Activities include: maintaining formal policies and program plans, employee education and Pollution Prevention Awareness programs, performance and oversight of waste minimization assessments, and maintenance of records of waste generation and waste reduction/prevention. ($1,470)

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III. Program Management (Cont'd):
Waste Minimization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	volume and toxicity of all Site waste streams through source reduction, recycling, reuse, and reclamation. Activities included: maintaining formal policies and program plans, employee education and Pollution Prevention Awareness programs, and oversight of waste minimization assessments. ($1,572)		
	SAVANNAH RIVER Continued sitewide waste minimization activities. Achieved partial implementation of the Excess Chemicals Management Program. Completed development of the Waste Coordinator Training Program. Implements sitewide cardboard recycling program. ($1,100)	SAVANNAH RIVER Continue sitewide waste minimization activities. Develop Waste Minimization Design Engineering Training. ($1,099)	SAVANNAH RIVER Will continue sitewide waste minimization activities. ($650)
	$20,570	$33,918	$26,087
Capital Equipment	The Waste Minimization section of the budget provides for capital equipment purchases to support the activities described above. ($36)	No activity. ($0)	The Waste Minimization section of the budget provides for capital equipment purchases to support the activities described above. ($820)
	$36	$0	$820
Subtotal, Waste Minimization	$20,606	$33,918	$26,907

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Agreements-In-Principle (AIP)	ALBUQUERQUE Supported the State of New Mexico's oversight and monitoring of DOE compliance with applicable environmental laws and regulations at SNL-NM, LANL, WIPP and ITRI. Activities include: air and water monitoring, offsite radioactivity surveillance, consultation with other agencies and emergency response. ($3,396)	ALBUQUERQUE Will support the State of New Mexico's oversight and monitoring of DOE compliance with applicable environmental laws and regulations at SNL-NM, LANL, WIPP and ITRI. Activities include: air and water monitoring, offsite radioactivity surveillance, consultation with other agencies and emergency response. ($3,514)	ALBUQUERQUE Will support the State of New Mexico's oversight and monitoring of DOE compliance with applicable environmental laws and regulations at SNL-NM, LANL, WIPP and ITRI. Activities include: air and water monitoring, offsite radioactivity surveillance, consultation with other agencies and emergency response. ($2,816)
	IDAHO Continued to support the Environmental Oversight and Monitoring Agreement (EOMA) through continuing activities including monitoring, emergency response coordination, public awareness, and data management. Updated and expanded waste inventories and characterization reports, performed required sampling and analysis to verify inventory data, and to respond to requested special studies and issue resolution reports. Supports activities to renegotiate a new EOMA. ($3,670)	IDAHO New EOMA will support activities including monitoring, emergency response coordination, public awareness, environmental surveillance, and State reporting. ($2,960)	IDAHO Will continue environmental oversight activities which include emergency response and preparedness, environmental surveillance, and State of Idaho quarterly reports for ongoing activities. ($1,960)
	OAKLAND The State of California submitted semi-annual Technical Progress Reports and a Federal Assistance Program/Project Status Report to DOE. Also completed a video presentation of the California Agreements-In-Principle Program. Prepared work outline to study stable isotopes at all DOE sites. Collocated direct radiation monitoring device (Thermal Luminscent Devices) at DOE sites perimeter/offsite locations. ($2,000)	OAKLAND The State of California will submit semi-annual Technical Program Reports and a Federal Assistance Program/Project Status Report to DOE. Also plan for split soil and surface water samples with Energy Technology Engineering Center and Environmental Protection Agency offsite locations, locate appropriate sites for and install tritium and air particulate system at Lawrence Berkeley Laboratory (LBL) and Lawrence Livermore National Laboratory (LLNL), prepare technical	OAKLAND Will continue prior year activities. The State of California will continue to submit semi annual Technical Program Reports and a Federal Assistance Program/Project Status Report to DOE. ($1,500)

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III. Program Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Agreements-In-Principle (AIP) (Cont'd)		review on all sites Environmental Reports, continue direct gamma radiation monitoring at all sites, begin stable isotopes studies at Laboratory for Energy-Related Health Research, LBL and LLNL. ($2,000)	
	ROCKY FLATS Funded payments to the State of Colorado per the Agreement-in-Principle (AIP), to allow the State to perform environmental monitoring and oversight, emergency response coordination and public awareness activities. Provided payment of semi-annual Hazardous Waste Activity and quarterly payment of Permit Review fees per the Colorado Hazardous Waste Regulations. ($2,825)	ROCKY FLATS Continue making payments to the State of Colorado for the AIP and semi-annual Hazardous Permit Review fees under Colorado Hazardous Waste Regulations. ($2,845)	ROCKY FLATS Responsibility and funds for AIP payments will transfer to the Office of Facilities and Nuclear Materials Stabilization upon approval of the Memorandum of Agreement. ($2,205)
	$11,891	$11,319	$8,481
Payments to Local Communities	RICHLAND Management responsibility and funding for these grants are transferred to the Office of Facility Transition and Management. ($0)	RICHLAND No activity. ($0)	RICHLAND No activity. ($0)
	$0	$0	$0
Program Management	$236,754	$184,113	$141,778

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: Facility Operations and Maintenance

The Waste Management Program must treat, store, and dispose of a large volume of newly generated and inventoried waste. If no new waste was generated, the Program would need to manage the legacy waste accumulated over forty years of weapons research, development, and production. This budget category funds day-to-day operations and maintenance of existing facilities to safely treat, store, and dispose of all previously described waste types in an environmentally safe manner. The problems associated with a program this size include compliance with a wide variety of federal, state, and local, and sometimes conflicting environmental regulations.

This budget category describes the ongoing waste management program activities being conducted at all sites. The program provides for planning, budgeting, safety, and quality assurance for continued safe and efficient waste management operations, with an emphasis on upgrading safety, conduct of operations, and maintenance of all operations, particularly those of mixed waste storage facilities. This program continues to identify and address potential safety issues related to waste storage tanks at the Hanford, and other sites, as needed, through increasing efforts to upgrade safety documentation and validate safety envelopes to meet changing standards. It also provides support for National Environmental Policy Act (NEPA) documentation for waste management facilities, and ongoing prior year activities. Finally, this category describes options to contract with private concerns for providing the waste management complex with long-term services, including treatment, storage, and disposal of various waste types.

Examples of waste treatment, storage, and disposal activities being conducted at all sites are presented by operations office, or at the lower site levels where appropriate, to highlight areas of budget growth or decline. The waste being dealt with includes liquid, solid and gaseous forms. The kind of management required for these wastes depend upon both the waste form and waste type, as well as the governing regulation, which often is the Resource Conservation and Recovery Act (RCRA). Many of the activities described in this section are designed to safely treat, store, or dispose of the waste in the most environmentally acceptable, and regulatorily compliant manner possible.

Waste treatment activities include compaction, evaporation, stabilization, solidification and incineration. Pretreatment of waste may also be necessary before shipment off-site or to provide a stable waste form for storage. Storage activity at all sites includes sorting, stacking, documenting, and inspecting the waste in storage to achieve and maintain regulatory compliance. It also includes developing closure plans for storage areas not able to meet RCRA permitting requirements. Finally, disposal activities include the operations of hazardous, sanitary, and low-level radioactive waste disposal facilities, transportation, permitting, quality assurance, development of waste acceptance criteria, sampling and analysis, and recordkeeping.

The benefit of funding these programs is not merely compliance with environmental regulations. Funding these programs assures that workers, the environment and the public are protected from the hazards presented by these wastes.

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II. A. Summary Table: Facility Operations and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Albuquerque	$ 128,636	$ 121,705	$ 88,064	$ -33,641
Chicago	$ 300	$ 246	$ 407	$ 161
Idaho	$ 186,670	$ 172,113	$ 175,433	$ 3,320
Nevada	$ 11,426	$ 10,993	$ 16,070	$ 5,077
Ohio	$ 0	$ 0	$ 10,386	$ 10,386
Oakland	$ 27,683	$ 29,999	$ 27,326	$ -2,673
Oak Ridge	$ 137,757	$ 144,493	$ 142,060	$ -2,433
Richland	$ 379,898	$ 367,175	$ 354,171	$ -13,004
Rocky Flats	$ 91,827	$ 102,150	$ 78,713	$ -23,437
Savannah River	$ 276,244	$ 287,384	$ 286,261	$ -1,123
Total, Facility Operations and Maintenance	$ 1,240,441	$ 1,236,258	$ 1,178,891	$ -57,367

II. B. Laboratory and Facility Funding Table: Facility Operations and Maintenance

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 300	$ 246	$ 407	$ 161
Hanford Site	379,898	367,175	354,171	-13,004
Idaho Chemical Processing Plant	110,264	100,668	97,485	-3,183
Idaho National Engineering Lab	76,406	71,445	77,948	6,503
Kansas City Plant	7,105	6,726	5,737	-989
K-25 Site	64,712	65,960	60,284	-5,676
Lawrence Livermore National Lab	27,683	29,999	27,326	-2,673
Los Alamos National Laboratory	73,383	66,774	50,933	-15,841
Mound Plant	11,603	11,476	10,386	-1,090
Nevada Test Site	11,426	10,993	16,070	5,077
Oak Ridge National Lab	32,519	37,625	40,067	2,442
Pantex Plant	15,799	16,260	12,110	-4,150
Pinellas Plant	2,569	2,537	2,269	-268
Rocky Flats Plant	91,827	102,150	78,713	-23,437
Sandia National Laboratories	18,177	17,932	17,015	-917
Savannah River Operations Office	276,244	287,384	286,261	-1,123
Y-12 Plant	40,526	40,908	41,709	801
Total, Facility Operations and Maintenance	$ 1,240,441	$ 1,236,258	$ 1,178,891	$ -57,367

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Facility Operations and Maintenance			
Albuquerque			
Operating	LOS ALAMOS NATIONAL LABORATORY (LANL)	LOS ALAMOS NATIONAL LABORATORY (LANL)	LOS ALAMOS NATIONAL LABORATORY (LANL)
	Conducted the following Waste Management Operation activities:	Conduct the following Waste Maangement Operation activities:	Will conduct the following Waste Management operation activities:
	Conducted transuranic waste remediation and storage activities to comply with State of New Mexico Consent Agreement (over 7,000 M3 must be remediated). Completed procurement for construction of new temporary retrieval and storage units. Continued removal of remote handled TRU (RH-TRU) waste from hot cells and transport to TA-54 Area G for disposal.	Construct two temporary storage units with current and prior year funds. Design and construct drum venting system for safe interim storage. Complete removal of RH-TRU waste.	Develop TRU waste retrieval and storage procedures. Begin removal of waste from existing pads, drum evaluation and venting, and placement in new storage units. Funding increase due to commencement of operations.
	Treated 20 million liters of radioactive liquid wastewater to comply with the Clean Water Act. Maintained 30 year old treatment facility which is operating beyond design life.	Treat 20 million liters of radioactive liquid wastewater. Maintain facility.	Treat 20 million liters of radioactive wastewater. Maintain facility. Increase due to necessary waste vault renovation.
	Disposed of over 2,500 cubic meters of solid low-level radioactive waste at an onsite disposal facility.	Dispose of over 2,000 cubic meters of solid low-level radioactive waste. Commence operation of waste compactor for volume reduction/void space elimination. This preserves landfill space and lowers costs.	Will dispose of over 2,000 cubic meters of solid low-level waste.
	Continued upgrades to RCRA controlled air incinerator to enhance reliability and safety, and increase hours of operation. This is preparatory to mixed waste treatment operations for compliance with Federal facility Compliance Agreement with EPA Region VI.	Continue upgrades and safety documentation for the Controlled Air Incinerator.	Complete upgrades and safety documentation for the Controlled Air Incincerator. Conduct testing as required by the State of New Mexico in preparation of treatment operations in FY 1997.
	Provided management and support for all waste management operations. Major	Provide management and support for all waste management operations. Major	Will provide management and support for all waste management operations. Major

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III. Facility Operations and Maintenance (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	activities include long-term planning, permitting, baselining and budget support.	activities include long-term planning, permitting, baselining and budget support.	activities include long-term planning, permitting, baselining and budget support. Funding decrease due to productivity improvements and transfer of funding associated with certain management functions to other activities described in this narrative.
	Studied feasibility of small scale mixed waste treatment unit development. Treated, stored and/or disposed of over 1,900 cubic meters of hazardous and 400 cubic meters of low-level mixed waste per RCRA requirements. Hazardous waste treatment/disposal activities are generally conducted commercially offsite while mixed waste treatment occurs onsite in small scale units such as the Lead Decontaminaton Trailer and the Scintillation Vial Crusher. Expanded mixed waste storage. Enhanced conduct of operations and mixed waste radiation protection. ($68,814)	Commence design and fabrication work on two small scale mixed waste treatment units per FFCAct. Continue treatment, storage and/or disposal of similar quantities of hazardous and low-level mixed waste. ($61,093)	Commence design and fabrication work on two small scale mixed waste treatment units per FFCAct. Will continue treatment, storage and/or disposal of similar quantities of hazardous and low-level mixed waste. Funding decrease due to productivity improvements including waste minimization and waste workoff. ($47,230)
	KANSAS CITY PLANT (KCP)	KANSAS CITY PLANT (KCP)	KANSAS CITY PLANT (KCP)
	Waste management operations included compliant storage and disposal of hazardous and LLW/LLMW, industrial wastewater pretreatment, National Pollution Discharge Elimination System (NPDES) non-compliant activities, and program, technical, and administrative support. Specific activities accomplished this fiscal year included: establishing a project control system software team, preparing documents required for sanitation of classified hazardous waste and submitting the Draft Site Treatment Plan to Missouri Department of Natural Resources (MDNR). Initiated design criteria for	Prepare Final Site Treatment Plan required by the FFCAct. Complete Phase I and II of Waste Acceptance Criteria (WAC) program. The NPDES Sewer Systems Investigation, which was completed and transferred from the Corrective Activity budget account to this account, includes sampling, analysis, and corrective activities to ensure compliance with the NPDES permit for outfalls 001 and 002. Also, air emissions monitoring equipment will be purchased to comply with RCRA organic vapor mission regulations. Initiate repair/replacement of bulk storage tanks. ($6,726)	Operating requirements will decrease from FY 1995 to FY 1996 due to reduced contractual rates for disposal and transportation of regulated waste as well as reduced disposal volumes. This reduction in operations will be offset by the purchase and installation of capital equipment required for sanitization of classified hazardous waste. Will complete repair/replacement of bulk storage tanks. ($5,243)

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III. Facility Operations and Maintenance (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	repair/replacement of bulk storage tanks. ($7,080)		
	SANDIA NATIONAL LABORATORY-NEW MEXICO	SANDIA NATIONAL LABORATORY-NEW MEXICO	SANDIA NATIONAL LABORATORY-NEW MEXICO
	Waste Management activities included compliant treatment, storage, transportation, and disposal of hazardous, LLW, and LLMW; and TRU waste at the Albuquerque, New Mexico site, and the Tonopah test range in Nevada. Specific activities accomplished were: purchased and installed remote inspection equipment and environmental monitoring equipment required to sample, package and treat radioactive waste. Evaluated solid waste disposal options due to anticipated closure of Kirkland Air Force Base (KAFB) Landfill. Submitted draft site treatment plan to New Mexico Environmental Department (NMED). Submitted Nevada Operations (NVO)-325 application to the Nevada Test Site (NTS) for approval to ship LLW for disposal. Disposed of low-level radioactive mixed debris at Envirocare. ($14,817)	Prepare final site treatment plan for mixed waste under the FFCAct. Begin disposal of LLW at NTS. Submit permit applications for treatment, storage, transportation and disposal of all waste types as required by federal and state regulations. Implement waste management procedures at Radioactive Materials Management Areas (RMMAs) associated with the hazarous waste moratorium. Provide routine maintenance of storage faciltiies. ($15,671)	Begin treatment and disposal of mixed waste by either using mobile units developed at other Albuquerque sites or commercial offsite disposal. Will continue training and oversight of generators. Will conduct audits and performance reviews with EPA and State auditors. Maintain programs for legacy and special case waste, lead storage, recycling, and disposal. ($14,856)
	SANDIA NATIONAL LABORATORY-CALIFORNIA	SANDIA NATIONAL LABORATORY-CALIFORNIA	SANDIA NATIONAL LABORATORY-CALIFORNIA
	Waste operations included compliant storage, treatment, and disposal of hazardous, LLW, and LLMW, and program, technical, and administrative support activities. Specific activities completed this fiscal year included: prepared draft site treatment plan and submitted it to California, and began oversight of generators. Supported activities associated with FFCAct and management of LLW volumes due to the transfer of the Tritium Research	Prepare final site treatment plan. Modify RCRA Part B permit, obtain approval for shipment of LLW to Nevada Test Site (NTS). Implement a chemical inventory system to consolidate LLW, MW and HW databases. Begin development of mixed waste treatment systems. ($2,261)	Will continue permitting activities including application for incinerator Part B permit, tracking and oversight of generators, program planning and development, develop treatment options for additional waste streams. ($2,159)

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III. Facility Operations and Maintenance (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Laboratory to the Office of Waste Management. ($2,216)		
	MOUND-ALBUQUERQUE	MOUND-ALBUQUERQUE	MOUND-ALBUQUERQUE
	Upgraded Glass Melter per RCRA Part B Permit. Completed Glass Melter Environmental Assessment. Submitted conceptual and draft site treatment plans per the FFCAct. Completed LLW shipments to NTS. Modified waste certification program plan for additional LLW streams. Implemented Quality Assurance (QA) plan for approved LLW operations. Provided for offsite treatment and disposal of RCRA, Toxic Substances Control Act (TSCA), and special non-regulated waste at EPA permitted Treatment/Storage/Disposal facilities. ($11,603)	Begin startup modifications on the Glass Melter. Start bench scale testing for the packed bed reactor and scale up biodegradation. Submit Final Site Treatment Plan per the FFCAct. Begin characterization of legacy waste. Continue LLW shipments to NTS for disposal. Revise NVO-325 application for additional LLW streams to meet NTS WAC. Expand prior year activities to partially treat and dispose of additional hazardous waste generated by accelerated safe shutdown and transition from defense programs to Environmental Management. ($11,476)	No activity. (All activities transferred to the Ohio Field Office.) ($0)
	PANTEX	PANTEX	PANTEX
	Provided treatment, storage, transportation, and disposal of hazardous, toxic, and LLW/LLMW generated during assembly and weapons dismantlement activities. Implemented the hazardous waste moratorium procedures including training. A 20% increase in weapons parts shredding activities due to weapons dismantlement, caused a 15% increase in funding. Procured different hazardous waste disposal contractors to obtain cheaper rates which resulted in a cost savings. Disposed of low level radioactive mixed debris at Envirocare. Performed onsite treatment of high explosive waste at the burning grounds. Continued to dispose of LLW at NTS. A RCRA closure plan for obsolete portions of the burning grounds and the	Provide additional programmatic quality assurance and certification to support waste operations from nuclear weapon stockpile reduction efforts. Continue to dispose of hazardous waste at commercial offsite facilities. Continue to dispose of LLW at NTS. Provide support for pre-design activities for proposed line item project. Continue treatment of high-explosive waste at burning grounds. Finalize closure of the batchmaster unit and burning grounds. Prepare and submit a final site treatment plan required by the FFCAct. Prepare plans for treatability studies to evaluate macro-encapsulation and stabilization. ($16,260)	Will ensure that the waste certification program complies with WAC for the appropriate disposal facility. Will continue to dispose of hazardous, low-level and mixed waste at the same facilities, unless more cost effective alternatives are found. Will continue to support pre-design activities for proposed projects. Will continue to treat high explosive waste at burning grounds. Will begin designing and building mobile treatment skids for treatment of LLMW. ($12,110)

2123

III. Facility Operations and Maintenance (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	batchmaster unit was completed. Prepared and submitted the Draft Site Treatment Plan. ($15,799)		
	PINELLAS	PINELLAS	PINELLAS
	Waste management activities included compliant treatment, storage, transportation, and disposal of hazardous and LLW. Submitted Draft Site Treatment Plan to State. Revised RCRA hazardous waste Part B permit. Began plant shutdown activities and transfer of management from Defense Programs to EM-60. Implemented an aggressive waste minimization program. ($2,569)	Support plant shutdown activities to ensure waste removal meets DOE and all applicable Health and Safety guidelines. Shutdown activities generate a large amount of waste in a short period of time. RCRA regulations require this waste to be disposed of within 90 days to avoid fines and penalties. A funding shortfall of $3.4 million is anticipated due to accelerated shutdown activities. ($2,537)	Will continue to support plant shutdown activities to ensure waste removal meets DOE and all applicable health and safety guidelines. Will continue to maintain the waste minimization program. ($2,269)
	$122,898	$116,024	$83,867
Capital Equipment	The Albuquerque Operations Office budget provides for capital equipment purchases to support the activities described above. ($5,738)	The Albuquerque Operations Office budget provides for capital equipment purchases to support the activities described above. ($5,681)	The Albuquerque Operations Office budget provides for capital equipment purchases to support the activities described above. ($4,197)
	$5,738	$5,681	$4,197
Subtotal, Albuquerque	$128,636	$121,705	$88,064

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III. Facility Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago			
Operating	ARGONNE NATIONAL LABORATORY-EAST	ARGONNE NATIONAL LABORATORY-EAST	ARGONNE NATIONAL LABORATORY-EAST
	Funding used to install three Type B windows in the Alpha Gamma Hot Cell Facility (AGHCF) to improve worker safety. Managed and supported treatment and disposal of New Brunswick Laboratory (NBL) generated low-level radioactive waste. ($300)	Complete refurbishment of type B windows at the AGHCF. Manage and support treatment and disposal of NBL's generated low-level radioactive waste. ($246)	Will manage and support treatment and dispoal of NBL's generated low-level radioactive waste. ($407)
	$300	$246	$407
Subtotal, Chicago	$300	$246	$407
Idaho			
Operating	IDAHO CHEMICAL PROCESSING PLANT (ICPP)	IDAHO CHEMICAL PROCESSING PLANT (ICPP)	IDAHO CHEMICAL PROCESSING PLANT (ICPP)
	The following 7 separate tasks identify major activities at the Idaho Chemical Processing Plant. Funding is shown at the end of the task descriptions.	The following 7 separate tasks identify major activites at the Idaho Chemical Processing Plant. funding is shown at the end of the task descriptions.	The following 7 separate tasks identify major activites at the Idaho Chemical Processing Plant. funding is shown as the end of the task descriptions.
	Maintained level-of-effort for Resource Conservation and Recovery Act (RCRA) and mixed waste compliance activities. Increased activities included Part A and B permitting, RCRA facility design investigations, waste characterization activities, RCRA closures, RCRA groundwater monitoring and well drilling, plant compliance and support, and Land Disposal Restrictions (LDR) Consent Order and FFCA support.	Maintains support for RCRA compliance activities to support ICPP operations, Part B permit applications, RCRA groundwater monitoring, RCRA closures, and LDR Consent Order and FFCA support.	Will continue RCRA compliance activities to support ICPP operations, Part B permit applications, RCRA groundwater monitoring, and RCRA closures.
	Maintained level of effort to support ongoing environmental monitoring, permitting, and quality assurance required for compliance under state and federal laws. Activities included the following: 1) Update the comprehensive	Continue level of effort to support ongoing environmental monitoring, permitting, and quality assurance reviews required for compliance under state and federal laws. Continue support for DNFSB Recommendation 90 2	Will maintain level of effort to support ongoing environmental monitoring, permitting, and quality assurance reviews required for compliance under state and federal laws.

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	environmental checklists; 2) Install four groundwater monitoring wells; 3) Self Assessment and Trend Analysis; 4) Update the Environmental Monitoring Plan; 5) Support to achieving compliance with RCRA and National Environmental Policy Act (NEPA) for waste facilities; 6) Support to Waste Management facilities for closures; and, 7) Continue support for Defense Nuclear Facilities Safety Board (DNFSB) 90-2 assessment.		
	Continued efforts in support of the Idaho National Engineering Laboratory (INEL) Environmental Restoration and Waste Management (ER&WM) final Environmental Impact Statement (EIS). Activities included preparing original source documents, resolving comments on the draft EIS, and completion of the final EIS. Also included preparation of NEPA documents required for continuing ICPP operations. Activities were funded from indirect funds.	Continue to conduct efforts in support of the INEL ER&WM EIS and issue Record of Decision (ROD). Due to the December 1993 Court Order between the Department of Energy, the Department of Defense and the State of Idaho, new analyses is required to be included in the INEL ER and WM EIS.	Activities will be absorbed under INEL Site-Wide/Spent Nuclear Fuel (SNF) EIS effort.
	Continued unique process development support to ICPP waste operations on an ongoing basis. Activities included: 1) development of flowsheets for improved sodium waste calcination, 2) High Efficiency Particulate Air (HEPA) filter disposal oversight, 3) development work for spent fuel disposal, metal recycle, decontamination, and calcine retrieval and immobilization, and 5) general support to maintain full environmental and safety compliance.	Continue ongoing process development support to ICPP waste operations independent of project activity. Activities include: 1) New Waste Calcining Facility (NWCF) pilot plant testing for improved sodium waste calcination, 2) HEPA filter disposal development, 3) general support to maintain full environmental and safety compliance.	Will maintain ongoing process development support at a reduced level-of-effort to ICPP waste operations independent of project activity. Activities will include general support to maintain full environmental and safety compliance
	Operated the Process Equipment Wastewater (PEW) evaporator semi-continuously to reduce the amount of waste going to the tank farm, and ensured waste water discharged to the	Continue prior year operation of the PEW evaporator semi-continuously to reduce the amount of waste going to the tank farm, and ensure waste water discharged to the LET&D meets	Will continue operation of the PEW evaporator semi-continuously to reduce the amount of waste going to the tank farm, and ensure waste water discharged to the LET&D meets applicable

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Liquid Effluent Treatment and Disposal (LET&D) met applicable guidelines. Continued to operate the LET&D and the Process and Ventilation Atmospheric Protection System (APS), main stack monitor, New Waste Calcining facility (NWCF) stack monitor, and implemented other stack monitoring systems needed to comply with requirements. Performed routine maintenance, trained and certified operators, and maintained certification through ongoing training. Continued to process low-level waste from throughout the ICPP as well as waste water from other INEL sites.	applicable guidelines. Continue to operate the LET&D and the Process and Ventilation APS, main stack monitor, NWCF stack monitor, and implement other stack monitoring systems needed to comply with requirements. Perform maintenance and minor modifications to improve reliability. Continue training and certification and conduct the NWCF RCRA Part B performance test required per Consent Order with the state. Continue to process low-level waste from throughout the ICPP as well as waste water from other INEL sites.	guidelines. Will continue to operate the LET&D and the Process and Ventilation APS, main stack monitor, and NWCF stack monitor. Will continue maintenance and minor modifications to improve reliability. Will begin design of Main Stack Sump Project. Will continue to process low-level waste from throughout the ICPP as well as waste water from other INEL sites.
	Continued maintenance and facility upgrades to the NWCF. Completed sampling of six remaining High Level Liquid Waste (HLLW) tanks for RCRA characterization for compliance with RCRA Part B permit. Initiated HLLW evaporator installation. Continued the prior year operations and monitoring for HLLW tank farm to continue NWCF maintenance turnaround.	Continue NWCF maintenance turnaround and Operation Readiness Review (ORR), and prepare for the 18-month NWCF Campaign H-4. Complete HLLW Evaporator installation and begin testing. Continue the operations and monitoring for HLLW tank farm with increased funding to prepare for the new NWCF campaign.	Will complete NWCF maintenance turnaround and Operation Readiness Review (ORR). Will complete HLLW Evaporator testing and operate it as necessary. Will complete Tank Farm Valve Box Upgrade Project operational testing. Will continue the operations and monitoring for HLLW tank farm with increased activity and funding as the NWCF begins new campaign.
	Continued ongoing activities to support ICPP waste disposal. In addition, the program provided: 1) a hazardous waste compactor; 2) provided for the payment of all waste disposal fees; 2) continued employee education and awareness, updated waste characterization, and maintained records of waste generation and waste reduction/prevention; and, 4) updated the Waste Minimization Plan. ($42,396)	Continue increased level of training and monitoring of wastes in support of ICPP waste disposal. Waste disposal efforts include the following: 1) Maintain compliance with DOE, EPA, DOT, and OSHA requirements in the storage, handling, and shipment of hazardous materials/waste, 2) Update the Waste Minimization Plan; and, 3) Provide for the payment of all waste disposal fees. ($44,107)	Will maintain, at a reduced level-of-effort, the training and monitoring of wastes in support of ICPP waste disposal. Waste disposal efforts will continue to maintain compliance with DOE, EPA, DOT, and OSHA requirements in the storage, handling, and shipment of hazardous materials/waste. ($45,995)

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Expanded level-of-effort to implement the ICPP Spent Fuel/Waste Management Technology Development Plan. Activities included: 1) performance assessments, criteria development, and disposal system modeling; 2) evaluation of sodium waste disposal candidate technologies and continued experimental cold sodium waste laboratory tests; 3) began modifying calcine retrieval equipment and developed plans for laboratory-scale radioactive candidate waste form testing; 4) continued characterization, identification, and evaluation of candidate technologies for low-level liquid waste treatment; and 5) continued minimal effort toward radioactive waste metal usage concept development. ($27,250)	Maintain level-of-effort to implement the ICPP High Level Waste Technology Development Plan. Activities include: 1) conduct performance assessments for sodium bearing waste and develop and enhance support models for the waste treatment programs; 2) continue development of sodium waste processing and decontamination methods; 3) develop, evaluate, and select calcine removal process options and concepts and waste form compositions; 4) select sodium waste treatment technology and procure equipment to test technology. ($19,461)	Will continue implementation of the ICPP High Level Waste Technology Development Plan with decreased funding level. Activities include: 1) Remote laser decontamination demonstration, 2) Start construction of a LLW grout pilot plant, 3) Complete laboratory radionuclide partitioning tests, and 4) Complete design of calcine dissolver pilot plant. Funding will be subject to FFCAct Negotiations and subsequent approvals for New Facilities. ($12,656)
	Operated and maintained fuel receipt and storage facilities and received and stored all assigned fuels (including Naval fuels) at the ICPP. Transferred 199 fuel elements from CPP-603 to CPP-666 as required in the December 1993 Court Order. Provided operational support to replace and reconfigure fuel storage racks within the CPP-666 facility to accommodate increased spent nuclear fuel receipts. Repackaged degraded fuel storage cans in new fuel storage cans. ($17,158)	Continue to operate and maintain fuel receipt and storage facilities and receives and stores all assigned fuels (including Naval fuels) at the ICPP. Continues transfers of fuel from CPP-603 to CPP-666 as required in December 1993 Court Order. Design an underwater canning station in CPP-603 needed to repackage fuels for transfer and continued storage. Continue operations support to replace and reconfigure fuel storage racks in CPP 666. More efficient management and operation within the rack reconfiguration project allow productivity savings within this activitiy. Allow for extensive upgrades to basin water cleanup systems and remote handling equipment. Begin preparation for consolidation of spent nuclear fuels stored at the INEL. ($22,753)	Will continue to operate and maintain fuel receipt and storage facilities and receive and store all assigned fuels (including Naval fuels) at the ICPP. Will transfer fuel from CPP-603 North, Middle, and South basins to CPP-666 as required in the December 1993 Court Order. Will continue design and begin installation of an underwater canning station in CPP-603 needed to repackage fuels for continued storage. Will continue spent nuclear fuel consolidation activities for fuel stored at the INEL. More efficient use of personnel for surveillance and maintenance activities will lead to productivity savings in this area. ($20,904)

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Expanded the integrated spent nuclear fuel effort using systems analysis to establish the optimum interim storage scenario and continued work to complete the spent fuel inventory and characteristics database. Provided support to the National Spent Nuclear Fuel Program. Continued support for the INEL and FRR EIS documents. Effort was funded under the ICPP Spent Fuel/Waste Management Technology Development activities described above. ($0)	Continue program management support for the National Spent Nuclear Fuel Program. Provide NEPA documentation support and help support decision making for treatment and disposition of spent nuclear fuel. Maintain the spent nuclear fuel inventory database and the interim storage facility database. Effort is funded under the ICPP Spent Fuel/Waste Management Technology Development activities. ($0)	Will perform periodic assessments of spent fuels and storage facilities. Will continue to support National Spent Nuclear Fuel Program. Will issue Technology Integration Plan and Interim Storage Plan and continue to maintain spent fuel/facility database. Will maintain existing spent fuel program documents. An additional $4 million will be managed by Headquarters to perform additional Spent Nuclear Fuel program integration activities. ($12,151)
	Performed initial development of a dry storage demonstration project at the ICPP. Conducted a performance assessment using five different fuel types. Identified fuel recommended for storage testing. Effort was funded under the ICPP Spent fuel/Waste Management Technology Development activities described above. ($0)	Procure non-destructive examination equipment for the ICPP spent fuel storage basins. Initiate radioactive testing of the dry storage demonstration system. Evaluate results of spent fuel post irradiation examinations. ($4,136)	Will deploy non destructive testing equipment in the ICPP spent fuel storage basins. Will procure a canister loading and transfer cask and auxiliary handling equipment. Will commence dry storage testing using high enriched spent nuclear fuel. ($6,518)
	IDAHO NATIONAL ENGINEERING LABORATORY (INEL)	IDAHO NATIONAL ENGINEERING LABORATORY (INEL)	IDAHO NATIONAL ENGINEERING LABORATORY (INEL)
	Reviewed and upgraded facility safety procedures and documentation for an increased number of facilities as governed by DOE Orders 5480.5, 5480.22, 5480.23, and 6430.1A. Independent reviews of Safety Analysis Reports (SARs) prepared in FY 1994 will be performed. Updated and published INEL Site-Specific Plan. Prepared and completed Request for Proposals (RFP) for private sector treatment of INEL's backlog of Low Level Waste (LLW). Provided support for other privatization initiatives. Executed reporting and planning activities for ADS preparation and submittal, site specific planning, and roadmapping	Continue review and assessment activities governed by DOE Orders 5480.5, 5480.22, 5480.23, and 6430.1A. Independent reviews of the SARs prepared in FY 1995 will be performed. Evaluate feasibility results for mixed low level waste. Review and report occurence report trends. Decrease in funding results from environmental programs and Resource Conservation and Recovery Act (RCRA) activities moving into a separate category. ($15,459)	Will perform activities to develop revised implementation plan for DOE Order 5820.2B. Will provide assistance to generators for improving waste segregation and waste characterization practices. Will provide support services which include program level document control, procedure maintenance, configuration management, and Safety and Health support services. Will provide training in transportation and packaging to meet Department of Transportation (DOT), Nuclear Regulatory Commission (NRC), and Environmental Protection Agency (EPA) regulations. Reduced funding for FY 1996 can be attributed to cost savings,

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	efforts. Efforts include coordinating the preparation of the periodic monthly and quarterly reports to DOE-ID and DOE-HQ, and the preparation of Waste Management Program Management Plan. ($35,234)		Best Management Practices, M&O Contract Consolidation, and the elimination of redundancy of efforts in support services and document control. ($6,573)
	Continued activities required for compliance with DOE ES&H Orders. Provides the overall compliance consistency within all Department facilities/programs. Increased funding implements further corrective actions from Tiger Team and other self-assessment findings. Expanded prior year activities to improve low-level waste treatment facility performance, improved low-level waste disposal methods, and increased support for DOE Order 5820.2A implementation; including, the update and reissue of the INEL 5820.2A Implementation Plan. Provided inputs to the Conceptual and Draft Site Treatment Plans and the LDR agreement. Updated information on the INEL waste stream. These activities were funded under program management in FY 1994. ($0)	Maintain DOE Order 5820.2A compliance activities. Develop INEL-specific low-level waste class limits. Efforts will attempt to maximize the proportion of all INEL low-level waste/mixed low-level waste subjected to treatment at Waste Experimental Reduction facility, and will attempt to commence optimization of the treatment methods employed. Provide Resource Conservation and Recovery Act (RCRA) interface and FFCA support input to the Site Treatment Plans and the LDR compliance agreement. Continue environmental monitoring and permitting activities required for compliance under state and federal environmental laws with increased funding to allow escalation. ($9,822)	Will prepare and submit RCRA Part B applications and achieve compliance with the FFCA by coordinating, monitoring, and reporting schedules under the LDR compliance order. Will continue environmental monitoring and permitting activities required for compliance under state and federal environmental laws with increased funding to allow escalation. Will provide ongoing support for environmental databases. Will provide support for activities necessary to comply with the Clean Air Act and associated State of Idaho regulations. ($9,293)
	Provided funding to produce and publish and Environmental Impact Statement (EIS) and a Record of Decision (ROD) for Environmental Restoration and Waste Management (ER&WM) activities at the INEL and programmatic Spent Nuclear Fuel (SNF) activities for the DOE complex. FY 1994 activities covered the preparation of ER&WM EIS for INEL, public review and comment, and establish public reading rooms and outreach programs. Continued environmental impacts and options evaluation studies. NOTE: these	Compile all comments on the ER&WM Draft EIS. Identify potential preferred alternatives and prepare the Draft Final EIS and perform all necessary DOE/Naval Reactors DOE/NR/Site reviews, comment coordination, disposition and resolution. Support generation of ROD by the Secretary of Energy. NOTE: Activities are supported out of the base program in FY 1995. ($0)	Will complete the ER&WM EIS implementation plan. Will provide support to prepare lessons learned, final cost report, and interim baseline activities. Will support site wide NEPA compliance, including preparation of a preliminary draft EIS for Idaho's Site-Wide EIS. EIS activities will not require additional funding in FY 1996 ($0)

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	activities were supported out of the base program in FY 1994. ($0)		
	Performed mixed low-level waste treatment activities including bench scale demonstrations and treatment of special case mixed low-level waste required by RCRA. Restarted Waste Experimental Reduction Facility (WERF) to treat low-level waste at WERF which includes size reduction, compacting, and offsite shipment of LLW for commercial treatment. Continued efforts required to provide RCRA-compliant storage for hazardous and mixed waste at INEL. Provided centralized coordination, waste handling and operational support for the Mixed Waste Storage facility (MWSF) and Hazard Waste Storage facility (HWSF). ($9,491)	Continue treatment of low-level waste at WERF including size reduction, compacting, and offsite shipment of LLW for commercial treatment. Continue efforts required to provide RCRA-compliant storage for hazardous and mixed waste at INEL. Continue the development of nonincinerable mixed waste treatment processes. Provide direct funding for activities required for RCRA-compliant storage for hazardous and mixed waste at INEL and operation of sanitary landfill at INEL. Support ongoing activities for inventory management and decontamination processes for contaminated lead. Productivity savings will be achieved by procuring offsite treatment of LLW and MLLW whenever possible. ($15,338)	Will continue treatment of low-level waste at WERF including size reduction, compacting, and offsite shipment of LLW for commercial treatment. Increase in funding will provide funding resources to support proposed WERF incineration campaigns. Will operate Portable Water Treatment Unit to treat aqueous mixed low-level waste. Will perform dismantlement of contaminated lead casks. Continue RCRA-compliant storage for hazardous and mixed waste at INEL. ($18,008)
	Supported safe storage of Three Mile Island-2 (TMI-2) fuel in wet storage at Test Area North (TAN). Activities included monitoring, radiation protection, routine corrective and preventive maintenance, and resolution of an increased number of maintenance deficiencies. ($4,699)	Continue ongoing safe storage of TMI-2 fuel in wet storage at TAN including basin surveillance and routine corrective and preventive maintenance. Perform corrective maintenance activities to reduce health, safety, and environmental risk. ($4,973)	Will continue storage activities to provide for the surveillance, monitoring, and maintenance required until all components stored in the pool can be placed in dry storage. ($3,414)

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III. Facility Operations and Maintenance (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Continued ongoing program for TRU waste storage operations at the RWMC. Activities included: 1) monitoring, industrial hygiene, worker training, compliance-directed facility upgrades; 2) continuing activities in support of Non-Destructive Examination/Non-Destruction Assay (NDE/NDA) of TRU waste at Stored Waste Examination Pilot Plant (SWEPP); 3) continuing efforts in support of TRUPACT II waste shipping containers and loading facility to support shipment of TRU waste to WIPP; 4) continuing operation of drum venting facility; and, 5) continuing TRU waste stabilization, retrieval, and characterization. Continued ongoing program required to dispose of low-level waste at the RWMC. Activities include waste surveys, facility inspections, radiation monitoring, industrial hygiene, worker training, engineering support, and maintenance of waste tracking and data management systems. Continued to provide technical assistance to waste generators to ensure compliance with waste acceptance criteria. ($21,835)	Provide facility readiness to support the WIPP Experimental Test Program (WETP). Mainain LLW and TRU facilities and system in operational readiness to receive, dispose, and store LLW and TRU waste. Reconfigure stored TRU and MLLW from temporary support buildings to RCRA-compliant storage to meet State of Idaho Consent Order. Provide regulatory compliance support for LLW and TRU facilities. More efficient management and operations at the RWMC complex, such as consolidation of audits among oversight groups, will allow productivity savings in this activity. ($17,788)	Increased funding will prepare for TRU retrieval operations which include training, documentation upgrades, startup support, and will continue reconfiguration of stored waste into RCRA-compliant storage to meet the Consent Order with the State of Idaho. Will provide Waste Generator Interface support for LLW and TRU waste shipments. Will continue receipt and disposal of LLW at the RWMC. Will perform TRU waste certification, examination, and waste characterization activities. ($29,556)
	$158,061	$153,837	$165,068
Capital Equipment	The Idaho Operations Office budget provides for capital equipment purchases to support the activities described above. ($28,609)	The Idaho Operations Office budget provides for capital equipment purchases to support the activities described above. ($18,276)	The Idaho Operations Office budget provides for capital equipment purchases to support the activities described above. ($10,365)
	$28,609	$18,276	$10,365
Subtotal, Idaho	$186,670	$172,113	$175,433

III. Facility Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Nevada			
Operating	Operated two Radioactive Waste Management Sites on the Nevada Test Site which included, disposal of large quantities of low-level radioactive waste (LLW) from DOE defense (or former defense) facilities across the DOE complex and classified LLW from the Department of Defense. Stored the mixed LLW and mixed transuranic wastes; collected short-term storage and shipped offsite hazardous waste. Operational activities also included environmental monitoring, site characterization, RCRA permit application and other regulatory support documents, Radiological Performance Assessments, federally mandated training for hazardous waste workers, etc. In FY 1994 a total of 752,644 cubic feet of LLW was emplaced in shallow land disposal. ($11,226)	Operate two Radioactive Waste Management Sites on the Nevada Test Site; the small decrease in funding is because of productivity savings. ($10,487)	Operate two Radioactive Waste Management Sites on the Nevada Test Site; the increase in funding is needed to increase site characterization and Radiological Performance Assessment activities, baseline operations of Liquid Waste Treatment Facility and mixed waste disposal. ($16,070)
	$11,226	$10,487	$16,070
Capital Equipment	The Nevada Operations Office budget provides for capital equipment purchases to support the activities described above. ($200)	The Nevada Operations Office budget provides for capital equipment purchases to support the activities described above. ($506)	No activity. ($0)
	$200	$506	$0
Subtotal, Nevada	$11,426	$10,993	$16,070

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III. Facility Operations and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Ohio			
Operating	No activity. Previously funded by Albuquerque. ($0)	No activity. Previously funded by Albuquerque. ($0)	MOUND-OHIO Will complete tritiated oil Glass Melter startup modifications, Title II design for the packed bed reactor, and scintillation vial volume raduction. Begin development of tritium recovery skid for mixed waste treatment. Will continue to support shutdown activities and disposal of related wastes. Will continue characterization of Legacy waste. Will maintain LLW storage facilities onsite until funding is available to resume shipments to WTS. ($10,386)
	$0	$0	$10,386
Subtotal, Ohio	$0	$0	$10,386
Oakland			
Operating	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL) Provided support for the Waste Management program at LLNL for the compliant management of hazardous, low-level, transuranic, and mixed waste; including treatment/recycling of used chemicals, mixed aqueous waste, and contaminated runoff, solidification/size reduction of filters and containers, characterization and verification of waste streams, and shipment of hazardous and low-level waste to offsite facilities for treatment and disposal; preparation of regulatory required waste management plans and reports; development and implementation	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL) Continue prior year treatment, storage, and disposal activities at LLNL including increased effort for upgrades of inventory and database systems for waste tracking and implementation of quality assurance procedures and plans; additional support will be used to perform characterization and/or treatability studies and implement characterization programs for mixed waste streams and legacy wastes. Additionally, waste minimization efforts will begin to show noticeable payoffs in reducing the cost of treatment and disposal activities. ($28,895)	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL) Will continue prior year treatment, storage, and disposal activities at LLNL. Waste minimization efforts will continue to show noticeable payoffs in reducing the costs of waste treatment and disposal activities. ($26,991)

III. Facility Operations and Maintenance (Cont'd):

Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	of quality assurance procedures; installation of database upgrades and enhanced waste inventory systems, and completon of RCRA and DOE facility assessments and audits. ($26,872)		
	$26,872	$28,895	$26,991
Capital Equipment	The Oakland Operations Office budget provides for capital equipment purchases to support the activities described above. ($811)	The Oakland Operations Office budget provides for capital equipment purchases to support the activities described above. ($1,104)	The Oakland Operations Office budget provides for capital equipment purchases to support the activities described above. ($335)
	$811	$1,104	$335
Subtotal, Oakland	$27,683	$29,999	$27,326
Oak Ridge			
Operating	K-25 Chemically treated approximately 40,000,000 gallons of regulated industrial and hazardous wastewater at the K-25 Site Central Neutralization Facility (CNF) to meet National Pollutant Discharge Elimination System (NPDES) permit requirements. Majority of wastewater is generated at the Toxic Substances Control Act (TSCA) Incinerator. Completed a conveyance study on waste streams entering the Central Neutralization facility (CNF) to resolve a tiger team finding. Initiated a preventive maintenance program and purchased replacement parts to ensure 24 hour per day operation of the CNF. Operated and maintained 70 storage	K-25 Continue treating approximately 40,000,000 gallons of wastewater at CNF. In addition, CNF will begin treating groundwater from an Environmental Restoration remediation project. Continue compliant operation and	K-25 Will continue treating similar volumes of wastewater at the CNF. Will continue operation and maintenance

III. Facility Operations and Maintenance (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	facilities at K-25. Activities included inspections, handling, RCRA permit preparation, and emergency preparedness for 1.4 million cubic feet of waste. The K-25 Site is the primary storage site on the Oak Ridge Reservation for LLW, hazardous, mixed, and TSCA waste. Completed lighting upgrades for three vaults to reduce energy usage and completed one mixed waste vault upgrade. Vault upgrades are necessary to meet forecasted storage needs for mixed waste. Initiated health physics surveys to reduce the amount of radiation control space managed and thereby reduce the cost.	maintenance of storage facilities for increasing volumes of waste. Upgrade lighting in four vaults and complete four mixed waste vault upgrades.	of storage facilities. Upgrade lighting in two vaults and complete four mixed waste vault upgrades based on projected waste generation.
	Transported and disposed of waste generated on and off the K-25 site in a safe and regulatory compliant manner. Resumed offsite hazardous waste shipments. Installed container cleaning and low-level waste compacting equipment to increase efficiency of storage space. ($32,604)	Continue operation of K-25 disposal facilities. Begin operation of container cleaning and low-level waste compacting equipment. ($34,485)	Will continue operation of K-25 disposal facilities and will operate the Filter Test Facility. ($32,501)
	Began safety evaluation for three facilities. Issued standards for waste certification and began development of certification procedures. Completed data records review to ensure accuracy of inventory database. ($5,524)	Continue waste tracking, facility safety evaluations certification, and strategic planning activities. ($3,679)	Will continue waste tracking safety analysis upgrades, and waste certification activities. ($854)

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III. Facility Operations and Maintenance (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Operated the Toxic Substances Control Act (TSCA) Incinerator in compliance with RCRA and TSCA permits. Treated 5.5 million pounds of radioactive and PCB-contaminated mixed waste. Began dewatering 1100 drums of sludge from the offgas treatment system in preparation for final disposal. ($24,595)	Continue compliant operation of the TSCA Incinerator. Conduct Incinerator State Air Test. Commence routine treatment of solid waste. Replace refractory in the mix chamber and partially replace the secondary combustion chamber refractory during the maintenance outage. ($26,367)	Will continue compliant operation of the TSCA Incinerator. Will increase solid waste throughput as liquid waste backlog is completed. Will replace packed bed scrubber in the offgas treatment system before it degrades so much that permit requirements will not be met. Will begin preparing for renewal of the RCRA Part B operating permit. ($25,934)
	Operated the Oak Ridge Filter Test facility, testing approximately 5000 HEPA filters to ensure performance criteria were met. These filters are used to ensure radionuclide releases to the atmosphere meet Clean Air Act requirements. This is the only facility to test HEPA filters for DOE facilities east of the Mississippi River. ($343)	Continue operating the filter test facility at about the same capacity. ($377)	No activity. ($0)
	OAK RIDGE NATIONAL LABORATORY (ORNL)	OAK RIDGE NATIONAL LABORATORY (ORNL)	OAK RIDGE NATIONAL LABORATORY (ORNL)
	Operated 24-hour routine, regulatory compliant treatment facilities for 440,000 gallons of high activity, liquid low-level waste (LLLW), 75 million gallons of low activity radiological process wastewater, and 125 million gallons of non-radiological effluent from the radiological waste treatment facility. Provided regulatory compliant management of gaseous wastes. The second campaign to solidify LLLW to reduce storage needs was completed to ensure compliant operation while additional storage tanks are being constructed in FY 1994. Continued routine activities for disposal or storage of approximately 80,000 cubic feet of solid low-level waste (SLLW). Continued storage of contact handled and remote handled	Continue compliant operation and maintenance of treatment facilities and complete the third LLLW solidification campaign. Complete Titles I and II design and begin construction of the out of tank evaporator for LLLW. This evaporator is expected to reduce the volume of LLLW concentrate needing storage by 18,000 gallons. This will free storage capacity for Environmental Restoration waste until the new storage tanks become available. Continue routine SLLW storage or disposal activities including offsite disposal/incineration and volume reduction of SLLW. Continue compliant operation and surveillance of storage facilities to assure containment of TRU and mixed waste. Mixed and TRU waste inventories will continue to increase	Will continue compliant operation of treatment facilities. Construction of the out-of tank evaporator for LLLW will be completed. Evaporator will begin operating after cold testing and check out is completed. Will continue compliant disposal or storage of SLLW. Will continue compliant operation and surveillance of TRU and mixed waste storage facilities. Will continue strategic planning and waste certification program. An additional Industrial Waste Management Facility pad will be constructed and used for onsite SLLW disposal. Will begin Phase III of the Safety Analysis Upgrade program. Proceed with Phase III of the program to cathodically protect low level waste transfer lines to meet requirements of the Federal Facilities

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III. Facility Operations and Maintenance (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	transuanic (TRU) waste (2,500 drums and 300 casks, respectively), and mixed waste (50,000 pounds). Storage will continue for TRU waste until WIPP is operational and for mixed waste pending the outcome of the Federal Facilities Compliance Act process treatment technology for some of the mixed waste. Conducted strategic planning for radioactive and mixed waste, planned transuranic waste characterization activities, and developed certification documents. ($23,055)	until treatment technology is available for all mixed waste categories and WIPP opens. Continue strategic planning and waste certification program. ($29,768)	Agreement. ($32,252)
	Completed planning and implementation activities for the Federal Facilities Agreement (FFA) liquid low-level radioactive waste tank compliance requirements. Began removing non-compliant tank from service and modified the operating procedures and Operational Safety Requirements to meet the requirements of the Federal Facility Agreement (FFA). ($9,200)	Prepare annual update of FFA program plans and schedule to reflect necessary operational or construction changes; submit revision to EPA/state. Will continue required leak testing of tanks and piping systems. Repair/modifiy active tank systems and waste management owned out-of-service tanks. Continue evaluations of non-programmatic in-leakage and identification of projects to eliminate the source. Conduct a programmatic risk assessment for tank and piping systems. Perform waste/risk characterizations as tanks are removed from service; data are submitted to EPA/state. Continue surveillance/maintenance on out-of service tanks. ($6,932)	Will continue leak testing required by the FFA. Repairs and modifications will be done as needed. Evaluations and source identification of in-leakage will continue. Will update programmatic risk assessment as needed. ($6,890)

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III. Facility Operations and Maintenance (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Y-12 Continued regulatory compliant operation and maintenance of existing treatment and storage facilities at the Y-12 Plant, but at a reduced level-of-effort. Treated 1,100,000 cubic feet of solid radioactive and sanitary wastes and 450,000 cubic feet of liquid radioactive, mixed, hazardous, and sanitary wastes. Resumed offsite shipment of radioactive contaminated wastes. Stored 315,000 cubic feet of solid radioactive, mixed, hazardous, and sanitary wastes and 28,000 cubic feet of liquid radioactive, mixed, hazardous, and sanitary wastes. Disposed of 1,100,000 cubic feet of solid radioactive and sanitary wastes and 175,000 cubic feet of liquid radioactive, mixed, hazardous, and sanitary wastes. Began operation of a groundwater treatment facility (previously funded by Environmental Restoration) and a new storage facility for compliant storage of classified, hazardous, mixed, and LLW. Continued compliant operation and maintenance of existing disposal facilities. Began operation of Industrial Waste Landfill V and construction of Demolition Landfill VI. Resumed offsite shipment of radioactive waste. Developed the waste certification program Developed procedures and training program for shipment of hazardous waste offsite for treatment and disposal. ($40,151)	Y-12 Continue, at a minimal level, regulatory compliant operation and maintenance of existing treatment, storage, and disposal facilities at the Y-12 Plant for similar quantities of waste. Implement waste certification program. ($39,981)	Y-12 Will continue regulatory compliant base operation of existing treatment, storage, and disposal facilities, implementation of the waste certification program, and minimal preventive maintenance. ($40,419)
	$135,472	$141,589	$138,850

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III. Facility Operations and Maintenance (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($2,285)	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($2,904)	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($3,210)
	$2,285	$2,904	$3,210
Subtotal, Oak Ridge	$137,757	$144,493	$142,060
Richland			
Operating	RICHLAND TANK WASTE REMEDIATION SYSTEM	RICHLAND TANK WASTE REMEDIATION SYSTEM	RICHLAND TANK WASTE REMEDIATION SYSTEM
	Performed routine operation and maintenance activities at the Richland Tank Farms including the following major tasks:	Perform routine operation and maintenance activities at the Richland Tank Farms including the following major tasks:	Perform routine operation and maintenance activities at the Richland Tank Farms including the following major tasks:
	Began operation of 242-A Evaporator at full capacity adding process condensate to the Liquid Retention Effluent Facility.	Operate 242-A Evaporator through one more waste volume reduction campaign and develop plans to shutdown the facility for major maintenance upgrades to support future waste volume reduction needs. Continue filling the Liquid Effluent Retention Facility with evaporator process condensate and begin planning to place the 242-A Evaporator in a maintenance outage for confinement upgrades and facility improvements	Will continue to operate the 242-A Evaporator and will operate 241 SY-101 mixer pump.
	Phased implementation of tank farm improvement programs with focus on enhanced safety and compliant operations. The improvements emphasized conduct of operations, conduct of maintenance, training upgrades, etc. Continue operations and maintenance of 177 Single and Double Shell Tanks Continued tank farm Safety Analysis Report (SAR) upgrades	Continue preventative/corrective maintenance operations, surveillance, monitoring, data collection, operator training, and planning in support of Interim Safety Basis.	Will continue preventative/corrective maintenance operations, surveillance, monitoring, data collection, operator training, and planning in support of Interim Safety Basis.

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III. Facility Operations and Maintenance (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Increased Single Shell Tank (SST) stabilization activities equipment preparation, staging, pumping, and waste transfer system operation, to meet TPA requirements and improved emergency pumping capabilities through SST tank farm transfer piping system restoration and repair. ($148,742)	Continue Single Shell Tank (SST) stabilization program including watchlist SST analysis in support TPA milestone M-41. ($133,804)	Will continue Single Shell Tank (SST) stabilization program including watchlist SST analysis in support TPA milestone M-41. ($130,500)
	Improved Tank Safety Program integrated scheduling activities. Completed tank safety programmatic risk assessment. Installed additional thermocouple tree in high heat tank 106-C. Continued progress growth in FeCn mitigation, flammable gas, and organic tank programs; demonstrate/evaluate FeCn mitigation technologies; increased FeCn instrumentation upgrade program activities to allow for continuous temperature monitoring of all FeCn tanks; installed three portable exhausters to improve FeCn tank ventilation; installed moisture monitoring system in twelve FeCn tanks; fully supported flammable gas mitigation activities for all 24 flammable gas watch list tanks; developed sampling probe for in-situ characterization of macroscopic physical properties and chemical constituents in flammable gas tanks; demonstrated organic destruction techniques for 101-ST tank remediation; and improved instrumentation and monitoring capabilities in affected flammable gas tanks. ($54,999)	Maintain tank safety mitigation/resolution efforts. Complete mitigation testing of flammable gas tank 101-ST. Continue ventilation/monitoring upgrades for flammable gas DSTs such that completion will occur by 9/95. Continue temperature/pressure monitoring upgrades in organic tanks such that completion will occur by 9/95. Complete process test in high-heat tank 106-C. Continue vapor characterization and monitoring in C tank farm such that resolution of the toxic vapor safety issue will occur by 9/95. Procure and fabricate additional developmental mobile laboratories for sampling and characterizing tank vapors. Sample vapor space of remaining ferrocyanide tanks. Complete studies on FeCn waste comparison, aging, solubility and specification. Complete Aerosol test necessary for FeCn safety issue resolution. Install remaining thermocouple trees and connect to Tank Monitoring and Control System (TMACS). Complete engineering study for Phase 2 mitigation of tank 107 AW. ($55,751)	FY 1996 work will include activities associated with resolution of the TWRS Priority 1 safety issues. These issues include flammable gas, high-heat tanks, ferrocyanide, organics, and criticality. Safety will also be associated with detailed design/construction of projects. This work will include new tanks, cross-site transfer line, retrieval, pretreatment, solid and liquid waste, and K-Basins/spent nuclear fuel. FY 1996 work will also require review of safety documentation associated with NEPA. Selected programs (example: 106-C Sluicing) will require review of safety associated with facility operation. ($44,100)

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III. Facility Operations and Maintenance (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Provided support of TWRS Tank Waste Analysis Plan (TWAP), Tank Characterization Reports (TCRs) and Tank Characterization Plans (TCPs). Provided support of input of characterization information into electronic databases. Completed all FY 1992 and FY 1993 core sample analyses and complete validation of the resulting data. ($67,297)	Continue to implement DNFSB recommendation 93-5 by continued sampling and analysis for resolution of safety issues. Provide sampling and analysis for retrieval, pretreatment and disposal programs. Continue support of Tank Characterization Reports (TCR), Task Characterization Plans (TCP) and input of characterizaton information into electronic databases. ($57,879)	Will continue to implement DNFSB recommendation 93-5 by continued sampling and analysis for resolution of safety issues. Will provide sampling and analysis for retrieval, pretreatment and disposal programs. Since funding levels are below expectations we are implementing innovative approaches, in consultation with the stakeholders, which will help us meet our commitments. ($68,300)
	Continued studies of Tank Waste Remediation System (TWRS) technology options and advanced treatment concepts in support of developing new technology in high-level waste and low-level waste technology areas. Continued Systems Engineering Analysis of TWRS program. Issued final program plan, Program Management Plan, TWRS Decision Plan, and Integrated Technology Plan. Issued approved TWRS multi-year program plan and initiate management and configuration management of TWRS program. Continued integration activities baseline development, and technology working groups. Legal drivers for this program are the Tri-Party Agreement, DOE Orders, and Federal Code of Regulations. ($13,700)	Continue studies of TWRS technology options and advanced treatment concepts in support of developing new technology in high level waste and low-level waste technology areas. Continue support to Systems Engineering analysis at a maintenance level which supports baseline and configuration management. Initiate risk mitigation activities as follow on to TWRS Risk Analysis Study. Continue integration activities, technology working groups, and evaluation of international technologies. Initiate program productivity improvement as defined in the Productivity Improvement Plan. Continue baseline development and NEPA activities including completion and issuance of draft EIS. ($43,176)	Will support TWRS business and baseline management, environmental safety and health and quality assurance, Resource Conservation and Recovery Act Permit, Environmental Impact Statement management, systems engineering, Pacific Northwest Laboratory technology management support, Richland operations support, and project integration. Continue studies of TWRS technology options and advanced treatment concepts in support of developing new technology in high-level waste and low-level waste technology areas. Continue support to Systems Engineering analysis at a maintenance level which supports baseline and configuration management. Initiate risk mitigation activities as follow-on to TWRS Risk Analysis Study. Continue integration activities, technology working groups, and evaluation of international technologies. Will continue program productivity improvement as defined in the Productivity Improvement Plan. Continue NEPA activities including completion and issuance of draft EIS. ($39,300)

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III. Facility Operations and Maintenance (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Continued monitoring, sampling and analysis, maintenance, and purgewater disposal for groundwater monitoring wells. Drilled additional wells per Tri-Party Agreement (TPA) requirements, monitor cribs/vadose zones, report preparation and submission. Implemented groundwater protection management plan per DOE Order 5400.1. ($23,137)	Continue Resource Conservation and Recovery Act (RCRA) compliance effort by monitoring, and sampling and analysis for groundwater monitoring wells. ($22,598)	Will continue RCRA compliance effort by monitoring, and sampling and analysis for existing groundwater monitoring wells. ($18,000)
	PACIFIC NORTHWEST LABORATORIES (PNL)	PACIFIC NORTHWEST LABORATORIES (PNL)	PACIFIC NORTHWEST LABORATORIES (PNL)
	The following three paragraphs outline the major activities and funding at the Pacific Northwest Laboratories.	The following three paragraphs outline the major activities and funding at the Pacific Northwest Laboratories.	The following three paragraphs outline the major activities and funding at the Pacific Northwest Laboratories.
	Continued Waste Management Operations for PNL facilities including technical support, packaging and transportation of hazardous, low-level mixed and TRU wastes. Continued to provide quality assurance oversight of 10,000-20,000 gallons of liquid radioactive waste. Completed 305-B hazardous waste facility permit.	Continue Waste Management Operations for PNL facilities including technical support, packaging and transportation of hazardous, low-level mixed and TRU wastes. Continue to provide QA oversight of 10,000-20,000 gallons of liquid radioactive waste. Initiate a waste minimization program for all PNL facilities, including process waste assessments and procurement of more efficient processing equipment.	Will continue Waste Management Operations for PNL facilities including technical support, packaging and transportation of hazardous, low-level mixed and TRU wastes. Will continue to provide QA oversight of 10,000-20,000 gallons of liquid radioactive waste. Will continue a waste minimization program for all PNL facilities, including process waste assessments and procurement of more efficient processing equipment.
	Continued radiation monitoring of contaminated PNL lab spaces (Bldgs 231-Z, 242-B/BL, 2718E, and 308).	Continue corrective actions necessary to bring 300 Area RMW tank system into RCRA compliance. Continue radiation monitoring of contaminated PNL lab spaces.	Will continue corrective actions necessary to bring 300 Area RMW tank system into RCRA compliance. Will continue radiation monitoring of contaminated PNL lab spaces.
	No activity. ($20,315)	Initiate planning and implementation for remediation of asbestos/chemical hazards and update hazard assessments ($22,955)	Will continue planning and implementation for remediation of asbestos/chemical hazards and update hazard assessments. ($20,850)
	$328,190	$336,161	$321,050

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III. Facility Operations and Maintenance (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	The Richland Operations Office budget provides for capital equipment purchases to support the activities described above. ($51,708)	The Richland Operations Office budget provides for capital equipment purchases to support the activities described above. ($31,014)	The Richland Operations Office budget provides for capital equipment purchases to support the activities described above. ($33,121)
	$51,708	$31,014	$33,121
Subtotal, Richland	$379,898	$367,175	$354,171
Rocky Flats			
Operating	Maintained plantwide Resource Conservation and Recovery Act (RCRA) and other compliance programs which include: RCRA permit modifications, providing "on-the-floor" guidance for waste operations, conduct of RCRA unit surveillances, and the RCRA training program. Continued ongoing Community Relations activities for the waste regulatory program. The requirement to complete a Five-Year Plan, Site-Specific Plan and Roadmaps have been deleted. Continued to support the development of technologies and other activities as scheduled in the Comprehensive Treatment and Management Plan (CTMP). Prepared annual updates of previously submitted reports required by the Land Disposal Restriction (LDR) Federal facility Compliance Agreement (FFCA). Transitioned the CTMP into the Site Treatment Plant (STP) required by the Federal Facility Compliance Act (FFCAct). Prepared and submitted the Conceptual STP and the Draft STP and provided input to update the National Mixed Waste Inventory Report (MWIR). Continued Transuranic (TRU) and Low Level (LL) Waste Management Program to control generation, packaging,	Continue RCRA and other regulatory compliance programs which include: RCRA permit modifications, providing "on-the-floor" guidance for waste operations, conduct of RCRA unit surveillances, and the RCRA training program to support Rocky Flats Environmental technology Site (RFETS) operations. Responsibility for the development and implementation of an integrated Site-Wide Chemical Management Program for control and disposition of regulated and non-regulated chemicals transfers to the Office of Waste Management from the Office of Facilities and Nuclear Material Stabilization. Continue the Community Relations Program for waste management activities. Continue activities to meet commitments in the CTMP/Proposed STP with the exception of the research and development portion which is expected to be supported by the Office of Technology Development. Prepare annual updates to previously submitted reports as required by LDR FFCA and FFCAct. Prepare and submit Proposed STP. Continue support for ongoing TRU and LL Waste Management Program and Quality Assurance required for compliance under State and Federal	Will continue RCRA and other regulatory compliance programs which include: RCRA permit modifications, providing "on-the-floor" guidance for waste operations, conduct of RCRA unit surveillances, and the RCRA training program activities to support RFETS operations. Will continue implementation and management of Site-Wide Chemical Management Program. Will continue Community Relations Program for waste management activities. Will also continue payment of semi-annual Hazardous Waste activity and quarterly payment of permit review fees per the Colorado Hazardous Waste Regulations. Will continue activities to meet the commitments of the FFCAct Compliance Order with the exception of the research and development portion which is expected to be supported by the Office of Technology Development. Will prepare annual updates to previously submitted reports as required by FFCAct. Will continue TRU and LL Waste Management Program and Quality Assurance required for compliance under State and Federal laws. Will prepare and submit generator disposal applications for additional waste streams to NTS. Will

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III. Facility Operations and Maintenance (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	storage and shipment of radioactive and mixed waste. Developed and submitted the Comprehensive Waste Management Plan (CWMP). Supported Waste Management Quality Assurance Program operation and maintenance. Prepared and submitted waste generator applications to dispose of five additional LL waste streams at the Nevada Test Site (NTS). Maintained the Waste and Environmental Management System (WEMS) which tracks liquid and solid TRU, mixed TRU, LL, mixed LL and hazardous wastes from cradle-to-grave. Completed development of and began operation of WEMS Liquid Tracking Module (LTM). Expanded the Waste Stream Analytical Methods Development/Implementation Program. Continued development of sampling and analysis techniques for heterogeneous waste. Continued implementation of modified SW-846 methods in onsite laboratories. Continued sample and analysis program for Backlogged LL Waste by sampling additional waste streams. ($32,092)	laws. Activities include: prepare and submit generator applications to dispose of two additional LL waste streams at NTS. Continues development and implementation of the CWMP. Continues WEMS operation and integrates WEMS modules with all waste/chemical/laboratory/systems. Continue analytical methods of development and implementation onsite. Extends heterogeneous waste sampling and analysis development to additional waste streams. Sample additional Backlogged LL Waste streams. Responsibility for Non-Destructive Assay (NDA) Operations transfers to the Office of Waste Management from the Office of Facilities and Nuclear Materials Stabilization. NDA Operations provide assay and Real Time Radiography of waste containers for certification for storage and shipments. ($35,708)	continue CWMP implementation. Will continue WEMS operation. Will continue analytical method development and implementation onsite. Provide technical information to support headspace sampling as a valid waste characterization tool. Will sample additional backlogged LL waste streams. Will continue NDA Operations. Will fund Office of Waste Management portion of Workforce Restructions costs. ($39,045)
	Treated all aqueous waste through precipitation, filtration, evaporation, and solidification in Building 374 and 774. Specific tasks included: treating 155,000 gallons of organic waste; processing 12 million gallons of aqueous waste; and processing 1,444 liters of miscellaneous laboratory waste. Continued implementation of Conduct of Operation (COOP) procedures Continued reprocessing and repackaging existing deteriorated saltcrete to meet RCRA treatment standards and disposal site Waste Acceptance Criteria (WAC). Developed waste sampling program to certify Saltcrete for disposal.	Treat all aqueous waste through precipitation, filtration, evaporation, and solidification in Building 374 and 774. Specific tasks include: treating 155,000 gallons of organic waste; processing 12 million gallons of aqueous waste; and processing approximately 1,500 liters of miscellaneous laboratory waste. Continue the Building 371/771 Solution Stabilization program in Building 774 Continue implementation of Conduct of Operation (COOP) procedures. Continue reprocessing and repackaging of existing deteriorated saltcrete to meet RCRA treatment standards and disposal	Will treat all aqueous waste through precipitation, filtration, evaporation, and solidification in Building 374 and 774. Specific tasks include: treating 155,000 gallons of organic waste; processing 12 million gallons of aqueous waste; and processing approximately 1,500 liters of miscellaneous laboratory waste. Will continue the Building 371/771 Solution Stabilization program in Building 774. Continued implementation of Conduct of Operation (COOP) procedures. Will continue reprocessing and repackaging of existing deteriorated saltcrete to meet RCRA treatment standards and

III. Facility Operations and Maintenance (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Operated the Solid Waste Treatment Facility, Building 776, to treat, store and manage solid waste within the Protected Area (PA). Specific activities include: operation of the Supercompactor; and development of scope for the Advance Size Reduction Facility restart.	site WAC. Continue waste sampling program to certify Saltcrete for disposal. Operates the Solid Waste Treatment Facility, Building 776, to treat, repackage, store and manage solid waste within the Protected Area (PA). Specific activities include operations to begin the Advance Size Reduction facility restart.	disposal site WAC. Will continue waste sampling program to certify Saltcrete for disposal. Will operate the Solid Waste Treatment Facility, Building 776, to treat, repackage, store and manage solid waste within the Protected Area (PA). Specific activities include: operations to continue the Advance Size Reduction Facility restart.
	Continued storage and certification for solid waste. Activities included: 1) recharacterization and recertification of backlog waste, 2) operation of Real-Time Radiography Unit to ensure that no free liquids are in drums, 3) operation of RCRA permitted storage areas and non-permitted storage areas in compliance with state RCRA permit, and 4) staging and loading waste packages on transportation vehicles for offsite transportation. Resumed waste shipments to disposal sites. Shipped 12,000 cubic feet of Low-Level Waste for disposal. Continued to manage and maintain saltcrete storage areas. Continued hazardous waste management activities (storage, inspection and staging) and shipments of hazardous waste to commercial disposal facilities. ($56,478)	Continue storage and certification for solid waste. Activities include: 1) recharacterization and recertification of backlog waste, 2) operation of Real-Time Radiography Unit to ensure that no free liquids are in drums, 3) operation of RCRA permitted storage areas and non-permitted storage areas in compliance with state RCRA permit, and 4) staging and loading waste packages on transportation vehicles for offsite transportation. Increase waste shipments to disposal sites. Ship 20,000 cubic feet of Low-Level Waste for disposal. Continues to manage and maintain saltcrete storage areas and begins shipment of Saltcrete to Envirocare for disposal. Continues hazardous waste management activities (storage, inspection and staging) and shipments of hazardous waste to commercial disposal facilities. ($62,523)	Will continue storage and certification for solid waste. Activities include: 1) recharacterization and recertification of backlog waste, 2) operation of Real-Time Radiography Unit to ensure that no free liquids are in drums, 3) operation of RCRA permitted storage areas and non-permitted storage areas in compliance with state RCRA permit, and 4) staging and loading waste packages on transportation vehicles for offsite transportation. Will continue waste shipments to disposal sites. Will ship 20,000 cubic feet of Low-Level Waste for disposal. Will continue to manage and maintain saltcrete storage areas and continue shipments of Saltcrete to Envirocare for disposal. Will continue hazardous waste management activities (storage, inspection and staging) and shipments of hazardous waste to commercial disposal facilities. ($37,668)
	Supported expense funded construction and testing of ongoing Capital Equipment (CE) projects including several Waste Characterization projects. Completed four CE Projects. ($2,570)	Support ongoing CE Project activities including: Non-Destructive Assay (NDA), Passive Active Drum Counter and Single Drum Real-Time Radiography System. Complete construction of three projects and initiate eight new projects. ($150)	Will complete three projects and will continue other ongoing CE Project activities within the funding shown in equipment request below. ($0)

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III. Facility Operations and Maintenance (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	$91,140	$98,381	$76,713
Capital Equipment	The Rocky Flats Field Office budget provides for capital equipment purchases to support the activities described above. ($687)	The Rocky Flats Field Office budget provides for capital equipment purchases to support the activities described above. ($3,769)	The Rocky Flats Field Office budget provides for capital equipment purchases to support the activities described above. ($2,000)
	$687	$3,769	$2,000
Subtotal, Rocky Flats	$91,827	$102,150	$78,713
Savannah River			
Operating	Continued operation of the Solid Waste Disposal Facility (SWDF) and the Interim Sanitary Landfill. Commenced operation of the new LLW Disposal Vaults and began closure of solvent tanks S23-S28. Completed TRU drum dewatering. Developed the Hazardous and Mixed Waste Information Tracking Systems. Began cleanup of the Beta-Gamma Incinerator to support turnover to Environmental Restoration. Began Waste Management Environmental Impact Statement. Continued waste certification activities. ($36,703)	Continue operation of the Solid Waste Disposal Facility, LLW Disposal Vaults and will close Interim Sanitary Landfill and solvent storage tanks S23-S28. Develop the TRU and Sanitary Waste Information Tracking Systems. Will complete cleanup of the Beta-Gamma Incinerator. Continue Waste Management Environmental Impact Statement and waste certification activities. ($43,615)	Will continue operation of the SWDF, waste certification activities and LLW Disposal Vaults. Will complete Waste Management Environmental Impact Statement. Will begin operation of Consolidated Incineration Facility and New Solvent Storage Tanks. Will continue operation of the SWDF, LLW Disposal Vaults, and LLW certification generator assessments. Will initiate TRU certification program. Will continue offsite disposal of sanitary waste. Will complete Waste Management Environmental Impact statement. Will begin operation of the consolidated incineration facility and the New Solvent Storage Tanks. ($46,196)

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III. Facility Operations and Maintenance (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	F AND H TANK FARMS, LIQUID WASTE PROGRAM MANAGEMENT	F AND H TANK FARMS, LIQUID WASTE PROGRAM MANAGEMENT	F AND H TANK FARMS, LIQUID WASTE PROGRAM MANAGEMENT
	Stored approximately 34 million gallons of high-level waste. Utilized evaporators to reduce waste volume, reducing environmental risks and reclaiming 1.2 million gallons of storage space. Operated and maintained all equipment; implemented Conduct of Operations, Maintenance and Technical improvements. Continued tank farm and In-Tank Precipitation (ITP) geotechnical study to determine if remediation actions are necessary. ($142,314)	Conduct HLW operations and maintenance with improvement initiatives in configuration management, work control and integrated schedule development. Safely receive and store newly generated waste. Reclaim 1.0 million gallons of tank space annually by evaporation and operation of the cesium removal column. Complete tank farm and ITP geotechnical investigations. ($153,762)	Will perform New Waste Transfer facility (NWTF) startup. Safely operate and maintain all facilities. Provide feedstock for the Defense Waste Processing facility. Will reclaim 1.0 million gallons of tank space annually through evaporation and operation of the cesium removal column. ($137,655)
	IN-TANK PRECIPITATION/EXTENDED SLUDGE PROCESSING (ITP/ESP)	IN-TANK PRECIPITATION/EXTENDED SLUDGE PROCESSING (ITP/ESP)	IN TANK PRECIPITATION/EXTENDED SLUDGE PROCESSING (ITP/ESP)
	Completed startup testing and initiated readiness reviews to begin operation of ITP, conducted ESP process vertification testing. ITP will process salt solution from waste tanks, providing DWPF feedstock. ESP continued to process waste sludge, which will become DWPF feedstock. These facilities are an important element of the system that will stabilize high-level waste for final disposal. ($67,390)	Complete readiness reviews and commence ITP radioactive operations. Complete ESP processing of sludge Batch #1 as required to meet DWPF Federal Facility Compliance Act (FFCAct) requirements. Processing of waste allows waste storage tanks to be emptied and removed from service. ($59,881)	Will continue operation of ITP and ESP, providing feed to DWPF and supporting eventual removal of waste from older-style tanks that lack secondary containment. These waste processing operations reduce safety and environmental risks by contributing to stabilization of high level wastes. ($58,087)

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III. Facility Operations and Maintenance (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	EFFLUENT TREATMENT FACILITY (ETF) Operated the ETF and processed approximately 20 million gallons of low-level liquid waste. The waste being treated comes from other tank farm operations and the canyons. ETF removes low-level radioactive and hazardous constituents, allowing the treated wastewater to be released to a permited outfall. ($20,786)	EFFLUENT TREATMENT FACILITY (ETF) Operate ETF and maintain capability to process approximately 20 to 25 million gallons of low-level liquid waste annually. Wastes treated will include canyon overheads, evaporator overheads, and waste streams from DWPF startup testing. ($19,044)	EFFLUENT TREATMENT FACILITY (ETF) Will operate ETF and maintain capability to process 20 to 25 million gallons of low-level liquid waste annually from other tank farm processes that include evaporation, and collected contaminated surface runoff. ($17,923)
	LIQUID EFFLUENT TREATMENT FACILITY (LETF), M-AREA Operated LETF for treatment of low-level reactor materials (RM) dilute waste water and 300,000 gallons of supernate from Interim Treatment/Storage Facility (IT/SF). Completed installation of the supernate transfer system to IT/SF Tank 10. Continued operation of Mixed Waste Storage Shed (MWSS). Began detailed design for stabilizing sludge remaining in IT/SF tanks and clean closure of the tanks. ($9,051)	LIQUID EFFLUENT TREATMENT FACILITY (LETF), M-AREA Continue operation of LETF for treatment of RM dilute waste water. Complete processing of supernate from IT/SF. Operate and support the MWSS. Complete construction permitting and startup activities for vendor stabilization of the low-level mixed waste sludge remaining in IT/SF tanks for disposal. ($9,787)	LIQUID EFFLUENT TREATMENT FACILITY (LETF), M-AREA Will continue operation of LETF for treatment of dilute waste water from vendor stabilization. Operate and support the MWSS. Will commence stabilization of sludge remaining in IT/SF tanks (upon permit receipt), for disposal. ($14,800)
	SPENT NUCLEAR FUEL (SNF) Performed planning for receipt and storage of Foreign Research Reactor (FRR) Spent Nuclear Fuel (SNF) on an urgent basis. Funding provided by Headquarters after notification of Congress. ($0)	SPENT NUCLEAR FUEL (SNF) Receive and store urgent relief shipments of FRR SNF in the Receiving Basin for Offsite Fuels (RBOF). Storage is required until the SNF is placed in a final repository, or until otherwise dispositioned. Complete the FRR Spent Fuel Environmental Impact Statement and determine whether to implement a new program to accept spent fuel from foreign research reactors. Basic operation of RBOF funded by Defense Program, with additional funds for FRR fuel operations provided from	SPENT NUCLEAR FUEL (SNF) Will provide incremental funds to allow for receipt of FRR spent fuel, if the decision made after completion of the NEPA process is to implement a new program for acceptance of such spent fuel. Storage is required until the SNF is placed in a final repository or is otherwise dispositioned. Storage is required until the SNF is placed in a final repository. Provide program management for planning and execution of DOE complex SNF program at SR and interfaces with other sites. ($5,900)

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III. Facility Operations and Maintenance (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)		Ca[illegible] funds and Headquarters acco[illegible] '0)	
	$276,244	$286,089	$281,261
Capital Equipment	No activity. ($0)	The Savannah River Operations Office budget provides for capital equipment purchases to support the activities described above. ($1,295)	The Savannah River Operations Office budget provides for capital equipment purchases to support the activities described above. ($5,000)
	$0	$1,295	$5,000
Subtotal, Savannah River	$276,244	$287,384	$286,261
Facility Operations and Maintenance	$1,240,441	$1,236,258	$1,178,891

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: Former Defense Program Facilities

This activity includes costs associated with the operation, management and maintenance of facilities which have transferred from the Defense Program to Environmental Management at Hanford. These facilities include: PUREX, PFP, N-Reactor, and Basins/300 Fuels. Effective in FY 1994, most of these activities have been transferred to the Office of Facility Transition and Management.

II. A. Summary Table: Former Defense Program Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
B-Plant/WESF	$ 28,289	$ 31,346	$ 35,085	$ 3,739
K-Basins	33,900	30,714	136,000	105,286
Total, Former Defense Program Facilities	$ 62,189	$ 62,060	$ 171,085	$ 109,025

II. B. Laboratory and Facility Funding Table: Former Defense Program Facilities

Hanford Site	$ 62,189	$ 62,060	$ 171,085	$ 109,025
Total, Former Defense Program Facilities	$ 62,189	$ 62,060	$ 171,085	$ 109,025

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Former Defense Program Facilities			
B-Plant/WESF	Continued previous years activities. Supports efforts for cleanout and stabilization of the canyon facility. Completes installation of Waste Encapsulation and Storage Facility (WESF) pool cell Ion Exchange System for emergency leaking capsule control. Completed planning and initiate activities to cleanout/washdown K-3 duct to reduce contaminants. ($27,589)	Continue operation and maintenance activities at B-Plant/WESF to provide minimum safe storage for cesium/strontium capsules. Unload 13 shipping casks of returned cesium capsules (197 units) from Denver and repackage safety devices for return transfer. Continue K-3 duct work cleanout effort. ($30,562)	Will continue operation and maintenance activities at B-Plant/WESF in order to provide minimum safe storage for cesium/strontium capsules. Unload 2 shipping casks of cesium capsules (25 units) from Lynchburg, VA. Safely transport defective capsules from Pacific Northwest Laboratory (PNL) storage to WESF Hot Cells. Will complete K-3 duct work cleanout effort. ($34,569)
	Prepared function design criteria for B-Plant ventillation system upgrades project. There is $300K capital construction associated with this GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Continue minimal activities in support of the conceptual design report for the ventillation systems upgrade project. Project is funded from prior year carryover. ($284)	Will continue minimal activities in support of the conceptual design report for the ventillation systems upgrade project. Project is funded from prior year carryover. ($266)
	The B-Plant/WESF budget provides for capital equipment purchases to support the activities described above. ($400)	The B-Plant/WESF budget provides for capital equipment purchases to support the activities described above. ($500)	The B-Plant/WESF budget provides for capital equipment purchases to support the activities described above. ($250)
	The B-Plant/WESF budget provides for construction to support the activities described above. ($300)	No activity. ($0)	No activity. ($0)
	$28,289	$31,346	$35,085

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III. Former Defense Program Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
K-Basins	The Office of Spent Nuclear Fuel (SNF), along with the Office of Environment and Health, developed Vulnerability Action Plans to reduce the potential for release of radioactive materials to the environment and to reduce radiation exposure to workers or the public. The Office of Spent Nuclear Fuel Vulnerability Action Plans specifically identify corrective actions for spent fuel storage facilities which will result in improvements and upgrades necessary to protect workers, the public and the environment. Many of the activities for this initiative will be funded from within available resources. Initiated technology development for fuel and sludge, continued surveillance and maintenance operations of K-Basins. ($33,400)	Continue to execute Path forward for K-Basins SNF Interim Storage, Vulnerability Action Plans, and applicable portions of DNFSB 94-1 Implementation Plan to mitigate environmental impacts due to the storage of spent nuclear fuels. Initiate development of K-Basins spent fuel removal Environmental Impact Statement (EIS) and Hanford SNF management EIS; continue fuel and sludge characterization; initiate pre-conceptual design of multi-canister overpacks SNF staging and storage facility, and SNF transport system; continue technology development for conditioning SNF and sludge. Initiate prepackaging demonstration for fuel and sludge at K-Basin; continue surveillance and maintenance operation at K-Basins, and complete seismic barrier installation at the K-Basins. ($30,576)	Will continue to execute path forward for K-Basins SNF Interim storage, Vulnerability Action Plans and applicable portions of DNFSB 94 Implementation Plan to mitigate environmental impacts due to the storage of spent nuclear fuels. Will complete K-Basins spent fuel removal and Hanford SNF management EIS; will continue fuel and sludge characterization; will complete conceptual design and initiate Title I design of multi-canister overpacks SNF staging and storage facility and SNF transport system; will continue technology development for conditioning SNF and sludge. Will continue preparation for packaging fuel and sludge at K-Basins; will continue surveillance and maintenance operations at K-Basins. Will initiate Title I design and construction of essential systems upgrades at K-Basins. In addition to the operating expense shown here, there is $26,000,000 in 96-D-406, K-Basins Operations Program, Design Only, and $3,800,000 in GPPs. ($104,200)
	The K-Basins budget provides for capital equipment purchases to support the activities described above. ($500)	The K-Basins budget provides for capital equipment purchases to support the activities described above. ($138)	The K-Basins budget provides for capital equipment purchases to support the activities described above. ($2,000)
	No activity. ($0)	No activity. ($0)	The K-Basins budget provides for construction to support the activities described above. ($29,800)
	$33,900	$30,714	$136,000
Former Defense Program Facilities	$62,189	$62,060	$171,085

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: New Facilities

In many cases, DOE does not have the technology or facilities to manage its waste in compliance with environmental regulations. New facilities, improvements to existing facilities, and replacement of badly deteriorating facilities are needed to become more fully compliant.

This program category includes the costs of engineering studies, designs, and construction costs of new projects and modifications to existing facilities needed for waste management operations. It also includes any environmental impact documentation, Safety Analysis Reviews and Operational Readiness Reviews necessary to construct and begin operation of a new or substantially modified facility. Once the facility is operating, all of annual and outyear costs, including capital equipment not related to construction, will be funded under the Facilities Operations and Maintenance budget described earlier in this document.

These activities assists DOE in achieving full compliance with environmental regulations and in meeting commitments made in compliance agreements. Failure to fund these activities will result in noncompliances, and reduce DOE's credibility with the regulators regarding commitment to compliance operations.

II. A. Summary Table: New Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Albuquerque	$ 9,163	$ 4,662	$ 10,562	$ 5,900
Chicago	$ 315	$ 0	$ 0	$ 0
Headquarters	$ 0	$ 0	$ 0	$ 0
Idaho	$ 53,081	$ 32,087	$ 23,735	$ -8,352
Nevada	$ 2,643	$ 6,026	$ 2,464	$ -3,562
Ohio	$ 0	$ 0	$ 0	$ 0
Oakland	$ 21,325	$ 13,189	$ 24,197	$ 11,008
Oak Ridge	$ 47,706	$ 40,036	$ 57,090	$ 17,054
Richland	$ 426,430	$ 517,364	$ 364,463	$ -152,901
Rocky Flats	$ 9,092	$ 6,466	$ 11,790	$ 5,324
Savannah River	$ 95,079	$ 88,956	$ 71,739	$ -17,217
Total, New Facilities	$ 664,834	$ 708,786	$ 566,040	$ -142,746

II. B. Laboratory and Facility Funding Table: New Facilities

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Argonne National Lab (West)	$ 315	$ 0	$ 0	$ 0
Hanford Site	426,430	517,364	364,463	-152,901
Idaho Chemical Processing Plant	17,241	11,255	14,223	2,968
Idaho National Engineering Lab	35,840	20,832	9,512	-11,320
K-25 Site	10,951	5,097	188	-4,909
Kansas City Plant	0	919	330	-589
Lawrence Livermore National Lab	21,325	13,189	24,197	11,008
Los Alamos National Laboratory	8,124	3,689	9,970	6,281
Mound Plant	415	54	0	-54
Nevada Test Site	2,643	6,026	2,464	-3,562
Oak Ridge National Lab	20,841	24,116	11,941	-12,175
Oak Ridge Operations Office	7,000	6,950	38,898	31,948
Pantex Plant	300	0	0	0
Rocky Flats Plant	9,092	6,466	11,790	5,324
Sandia National Laboratories	324	0	262	262
Savannah River Operations Office	95,079	88,956	71,739	-17,217
Y-12 Plant	8,914	3,873	6,063	2,190
Total, New Facilities	$ 664,834	$ 708,786	$ 566,040	$ -142,746

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
New Facilities			
Albuquerque			
Operating	LOS ALAMOS NATIONAL LABORATORY (LANL)	LOS ALAMOS NATIONAL LABORATORY (LANL)	LOS ALAMOS NATIONAL LABORATORY (LANL)
	Started Title I for Mixed Waste Receiving and Storage Facility (Project 92-D-171) using prior year carryover. Initiated Preliminary Safety Analysis Report (PSAR). Completed NEPA documentation. This facility is necessary for mixed waste preparation/staging for later treatment for compliance with the Federal Fcility Compliance Act. ($0)	Complete Title I and Title II design for Mixed Waste Receiving and Storage facility. Obtain approval of RCRA Part B permit. ($46)	Approve PSAR, and start construction using prior year funds. ($0)
	Started and completed Title I design for High Explosive Wastewater Treatment Facility. Prepared Environmental Assessment and Project Management Plan for HEWTF. This project is necessary for compliance with the Clean Water Act and associated compliance agreement with regulators. ($50)	Start and complete Title II Design and Safety Documentation for High Explosive Wastewater Treatment Facility. ($26)	Will start and complete Title III and construction for High Explosive Wastewater Treatment Facility, including readiness reviews, and final safety and startup procedures using prior year funds. ($0)
	Completed Phase 1 of the Radioactive Liquid Waste Treatment Facility collection system studies. Completed 95% of Phase 2 and 3 of RLWTF collection studies. Completed functional and operational requirements document. Drafted Conceptual Design Plan. This facility will replace an existing 30 year old facility operating beyond design life. ($7,074)	Begin Conceptual Design Report (CDR) and start Preliminary Safety Analysis Report (PSAR) and Environmental Impact Statement (EIS) for Radioactive Liquid Waste Treatment Facility. Complete TA-53 waste stream study and Phase 2 of the collection system studies. ($2,717)	Will complete CDR. Will begin design criteria and architect/engineer selection. ($4,420)
	Limited GPP construction on six projects with carryover funds. No new projects initiated. ($0)	Continue prior year GPP activities. Limited construction on five projects with prior year funds. ($0)	No activities. ($0)

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III. New Facilities (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	SANDIA NATIONAL LABORATORY-NEW MEXICO (SNL-NM)	SANDIA NATIONAL LABORATORY-NEW MEXICO (SNL-NM)	SANDIA NATIONAL LABORATORY NEW MEXICO (SNL-NM)
	Completed Title I and Title II for interim status storage facilities. Initiated design of upgrades to RMWMF GPP. ($324)	Complete GPP upgrades to RMWMF and interim status storage facility using prior year funding. ($0)	Will start construction of concrete pads and utility improvements for skid-mounted mixed waste treatment units using prior year funds. ($0)
	KANSAS CITY PLANT	KANSAS CITY PLANT	KANSAS CITY PLANT
	Completed GPP for Hazardous Waste Tank farm with prior year funding. ($0)	Begin and complete Title I and begin Title II for modification of demolition lot. ($171)	Will complete Title II and Title III for demolition lot with prior year funding. ($0)
	Validated replacement of industrial waste piping project. Began pre-Title I activities. ($0)	Continue pre-Title I activities. ($0)	Will begin and complete Title I and begin Title II. ($130)
	MOUND - ALBUQUERQUE	MOUND - ALBUQUERQUE	MOUND - ALBUQUERQUE
	GPP activities include: completed modifications to the mixed waste storage facility, Building 23, as required under RCRA; completed Title I and II on existing hazardous waste storage facility, Building 72. ($0)	The Hazardous Waste Storage Facility (HWSF) has been cancelled to save costs as a productivity improvement and because the Mound Plant is being shut down. The existing HWSF will be upgraded instead. ($54)	All activities transferred to the Ohio Field Office. ($0)
	MOUND - OHIO	MOUND - OHIO	MOUND - OHIO
	No activity. ($0)	No activity. ($0)	The existing Hazardous Waste Storage Facility is being upgraded and all Mound Plant activities have been transferred to the Ohio Field Office. ($0)

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III. New Facilities (Cont'd):
Albuquerque (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	PANTEX	PANTEX	PANTEX
	Began Environmental Assessment report for the Hazardous Waste Treatment and Processing Facility (HWTPF). There is $300,000 capital construction associated with this project, 92-D-172, which is included in a lump sum shown at the end of each operations office narrative section. ($0)	Revise Conceptual Design Report and begin Title I for HWTPF with prior year funding. ($0)	Complete Environmental Assessment. Complete Title I design and begin Title II design for HWTPF with prior year funding. ($0)
	GPP activities include: initiated Title I and II design with prior year funding for Burning Ground Upgrades. ($0)	Design is being delayed due to State permitting requirements. ($0)	Start and complete upgrades to burning grounds with prior year funding. ($0)
	Began a water balance study for the Pantex Sewer System upgrade project. ($0)	Project transferred to Defense Programs. ($0)	Project transferred to Defense Programs. ($0)
	$7,448	$3,014	$4,550
Construction	The Albuquerque Operations Office budget provides for construction to support the activities described above. ($1,715)	The Albuquerque Operations Office budget provides for construction to support the activities described above. ($1,648)	The Albuquerque Operations Office budget provides for construction to support the activities described above. ($6,012)
	$1,715	$1,648	$6,012
Subtotal, Albuquerque	$9,163	$4,662	$10,562

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Chicago			
Operating	ARGONNE NATIONAL LABORATORY-WEST Reviewed alternative treatment technologies to the proposed onsite Radioactive Sodium Waste Process Facility for the remote-handled sodium stored at Argonne-West. Review of treatment options was required for the Federal Facility Compliance Act to assure the proper actions were being taken and proposed methods would meet RCRA land disposal restrictions. ($315)	ARGONNE NATIONAL LABORATORY-WEST Continue prior year activity by performing an Options Analysis Study to determine the safest and most cost effective treatment method for the remote-handled sodium stored at Argonne-West using carryover funds. ($0)	ARGONNE NATIONAL LABORATORY-WEST No activity. ($0)
	$315	$0	$0
Subtotal, Chicago	$315	$0	$0
Headquarters			
Operating	Using prior year funding, completed TRU analysis needs assessment and laboratory capacity study. Developed conceptual design of a Waste Analytical Laboratory to meet the analytical needs for characterization of complex-wide TRU wastes. Project validation, technology plan and strategies for safety evaluation, and NEPA will be initiated prior to and during the conceptual design. ($0)	Complete conceptual design report, project validation, technology plan, and preliminary safety evaluation. Begin technology design support and NEPA documentation using prior year funding. ($0)	No activity. ($0)
	$0	$0	$0
Subtotal, Headquarters	$0	$0	$0

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Idaho			
Operating	IDAHO CHEMICAL PROCESSING PLANT	IDAHO CHEMICAL PROCESSING PLANT	IDAHO CHEMICAL PROCESSING PLANT
	Initiated feasibility studies to identify the method for retrieving and transporting calcine from bin set #1. Initiated conceptual design of the fuel canning and dry modular storage project. Produced feasibility study for the Waste Immobilization Facility. ($3,411)	Produce Waste Immobilization Facility short form data sheet. Complete construction of the High-Level Liquid Waste (HLLW) Evaporator Project. ($2,222)	Will continue system and operating testing for High Level Liquid Waste (HLLW) Evaporator. Will delay any conceptual design of Waste Immobilization Facility (WIF). ($5,702)
	Continued HLLW tank farm upgrade project 91-D-172. During this period construction of tank upgrades and support will be in process. Startup planning is scheduled to begin. Ongoing activities include project administration and environmental safety and health actions. Performed cost effectiveness review and Title I design update for new tanks. ($3,572)	Upgrades to existing tank farm to be completed meeting Consent Order. Less funds requested because project is in standby pending Environmental Impact Statement Record of Decision concerning need for new tanks. ($2,175)	Will implement EIS record of decision concerning new tanks. Decrease of funds because the project will remain in standby. ($988)
	All FY 1994 efforts for the NOx abatement project, 92-173, have been curtailed pending cancellation of project. ($790)	No activity. ($0)	Project discontinued. No activity as project is suspended. ($0)
	Continued activities including completion of conceptual design for FY 1995 projects and supports construction and system operations testing of previously funded projects. Increased level of scope and funding will result from the transfer, from Defense Programs to Waste Management, of additional Idaho Chemical Processing Plant (ICPP) GPPs formerly managed and funded under Defense Programs. ($3,918)	Continue activities including completion of conceptual design for FY 1996 projects and supports construction and system operations testing of previously funded projects. A reduced number of GPPs lowers the request for GPP funding in FY 1995. ($3,358)	Will continue activities including completion of conceptual design for FY 1997 projects and supports construction and system operations testing of previously funded projects. An increase in GPP activity will consequently increase the GPP request for FY 1996. ($4,051)

III. New Facilities (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	IDAHO NATIONAL ENGINEERING LABORATORY (INEL)	IDAHO NATIONAL ENGINEERING LABORATORY (INEL)	IDAHO NATIONAL ENGINEERING LABORATORY (INEL)
	Performed site selection evaluation studies for the proposed Idaho Waste Processing Facility (IWPF). Continued engineering studies to evaluate feasibility and functionality of candidate treatment technologies. Investigate cost effective methods of treating and processing all of the waste streams involved. Began environmental assessment analysis and begin engineering and cost evaluation activities required for project validation, including evaluation of prospective Architect/Engineering (A&E) firms. Initiated feasibility studies for mixed low-level waste disposal facility. ($7,060)	Continue pre-conceptual design activities in support of low-level waste disposal facility. Complete the Performance Assessment for Low-Level Waste disposal at the INEL. ($5,678)	Will perform conceptual design and preliminary safety analysis activities of the proposed Idaho Waste Processing Facility. Will commence conceptual design activities of the mixed low-level waste disposal facility. Will perform site characterization of the recommended site to support NEPA requirements. All activities will use prior year carryover. ($0)
	Construction of the TSA-RE (Project 90-D-178) began in FY 1994. Continued funding for program management, administrative support, continued programmatic construction support personnel, and ongoing procurement of equipment for the enclosure. Reduced funding results from fewer subcontracts awarded. Construction for two storage modules completed (Project 90 D-177). ($4,133)	Startup operations for two storage modules to transfer TRU waste from temporary storage into RCRA Compliant Storage to meet a consent order with the State of Idaho. Continue efforts to prepare the operating documents for the remaining TRU Waste Storage modules and conduct the ORRs. Continue construction of the TSA-RE line item construction project activities including the bid and award of additional subcontracts. Allow fabrication and procurement of retrieval equipment, and prepare the FSAR in support of the TSA-RE. ($5,075)	Will continue construction of the TSA-RE and initiate construction activities for the Waste Characterization Facility (WCF). Will commence operating the remaining TRU Waste Storage modules. Will allow fabrication and procurement of remaining retrieval equipment, and complete the TSA-RE. Will initiate pre-startup activities of the TRU retrieval. ($3,988)
	Continued support activities to maintain continuity of operations at the RWMC and the WROC. Continued efforts on ongoing GPPs and planning for FY 1995 GPPs; including the UST replacement activities. ($1,020)	Continue operations support activities with a reduced GPP funding level. Complete the ongoing GPPs. Provides minimal planning for future GPPs, including the WERF Liquid Waste Injection System. ($333)	Will complete GPP projects to support Radioactive Waste Management Complex (RWMC) operations. Will also include upgrades to Hazardous Waste Storage Facility (HWSF). ($123)

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III. New Facilities (Cont'd):
Idaho (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)			
	$23,904	$18,841	$14,852
Construction	The Idaho Operations Office budget provides for construction to support the activities described above. ($29,177)	The Idaho Operations Office budget provides for construction to support the activities described above. ($13,246)	The Idaho Operations Office budget provides for construction to support the activities described above. ($8,883)
	$29,177	$13,246	$8,883
Subtotal, Idaho	$53,081	$32,087	$23,735
Nevada			
Operating	Designed and partially funded the Liquid Waste Treatment System (Project 94-D-402) to provide RCRA-compliant treatment systems for the handling and disposal of contaminated water from the Nevada Test Site's environmental restoration Groundwater Characterization Project. Started construction of the RCRA required Flood Diversion Structure General Plant Project. In addition to the operating expense shown here, there is $2,114,000 of capital construction associated with this project, 94-D-402. ($529)	Start construction of Project 94-D-402 ($3,292,000 capital construction). Start reconstruction of badly deteriorated Road 5-01, project 95-D-406 ($2,338,000 capital construction). Construct General Plant Projects, including continuing construction Flood Diversion Structure and the start of construction of Area 5 Sewage System Lagoons. ($141)	Will complete construction of Project 95-D-406 with $1,023,000 capital construction. Continue construction of Project 94-D-402 with $282,000 capital construction. Complete General Plant Projects; Area 5 Sewage System Lagoons and Area 5 Controlled Area Access Building, Real-Time Radiography Building and Breaching and Sampling Building. ($534)
	$529	$141	$534
Construction	The Nevada Operations Office budget provides for construction to support the activities described above. ($2,114)	The Nevada Operations Office budget provides for construction to support the activities described above. ($5,885)	The Nevada Operations Office budget provides for construction to support the activities described above. ($1,930)
	$2,114	$5,885	$1,930

2162

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Nevada	$2,643	$6,026	$2,464
Ohio			
Construction	$0	$0	$0
Subtotal, Ohio	$0	$0	$0
Oakland			
Operating	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)
	Completed prior year subprojects and initiated new subprojects. There is $1,065,000 capital construction associated with this General Plant Project, shown in a lump sum at the end of each operations office narrative section. ($0)	Continue prior year subprojects and initiate new subprojects. There is $538,000 of General Plant Project funding shown as a lump sum at the end of each operations office narrative section. ($0)	Will continue prior year activities using carryover funds. ($0)
	Prepared Environmental Assessment (EA) for both Decontamination and Waste Treatment Facility (DWTF) subprojects at Lawrence Livermore National Laboratory (LLNL) (86-D-103); initiated Title I and II Design for B-494 subproject #02. Initiated Alternative Design Report for Subproject #01. There is $10,260,000 capital construction associated with this project. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Initiate construction activities for Phase 1 activities, site utilities; complete Alternative Design Review (ADR) and rebaseline project according to results of ADR; continue Environmental Assessment, permitting, and design activities. NOTE: A new baseline for the DWTF project was approved by DOE in 2nd Quarter FY 1995. The new scope was a result of the ADR and consists of the following new buildings: A Mixed Waste Management Facility (MWMF)/Liquid Waste Processing Building; a Solid Waste Processing Facility; a Reactive Materials Building; a Chemical Exchange Warehouse/High Curie Waste Storage/Classified Waste Storage Building; a Radwaste Storage Building;	Will complete construction activities for Phase 1, continue design and begin construction on Phase 2 and continue design on Phase 3. Note that the DWTF project, 86-D 103, has been under review by the DOE's office of Inspector General (OIG. The Office of Waste Management has been working with OIG to resolve the issues they have identified with the project. The OIG final report on DWTF is expected to be complete in February 1995. There is $8,885,000 capital construction associated with this project, shown in the Construction lump sum below. ($0)

2163

III. New Facilities (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)		and support facilities. Note that subprojects #1 and #2 were combined and that a new facility to house the MWMF will be constructed in lieu of upgrading existing building 494. Enhanced LLNL Waste Management capabilities provided by the DWTF project include: the facility to house the demonstration of treatment technologies which are alternatives to incineration (demonstration, equipment and design of the demonstration are funded under a separate operating funded project entitled the Mixed Waste Management Facility); treatment of mixed and reactive wastes; repackaging of TRU, LLW and LLMW; decontamination and size reduction; and upgrade waste storage facility. Changes to the project scope are detailed in the Construction Project Data Sheet. There is $4,995,000 capital construction associated with the DWTF, included in the Construction lump sum below. ($0)	
	Initiated permitting, safety analysis report and National Environmental Policy Act (NEPA) activities for the Mixed Waste Management Facility. ($9,000)	Continue permitting, safety analysis and NEPA activities. ($2,800)	Continue permitting and NEPA activities. ($1,400)
	$9,000	$2,800	$1,400

2164

III. New Facilities (Cont'd):
Oakland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Completed conceptual design and initialed system definitive design for MWMF. ($1,000)	Complete Title I and Title II design. ($4,856)	Continue design activities and begin long lead procurement for technology, demonstrations for the Mixed Waste Management Facility Demonstration Project, which will demonstrate technologies which are alternatives to incineration for the treatment of mixed waste. (Note that the facility to house the demonstrations is funded under a separate line item, #86-D-103) ($13,912)
	$1,000	$4,856	$13,912
Construction	Complete conceptual design and initiated system definitive design for MWMF. ($11,325)	Complete Tital I and Title II desing. ($5,533)	Coninue design activities and begin long lead procurement for technology, demonstrations for the Mixed Waste Management facility Demonstration Project, which will demonstrate technologies which are alternatives to incineration for the treatment of Mixed Waste. (Note that the facility to house the demonstrations is funded under a separate line item, #86-D-103.) ($8,885)
	$11,325	$5,533	$8,885
Subtotal, Oakland	$21,325	$13,189	$24,197

2165

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Oak Ridge			
Operating	OAK RIDGE RESERVATION No activity. ($0)	OAK RIDGE RESERVATION Revise the Conceptual Design Report (CDR) to address concerns about cost and scope raised during project validation for the Central Neutralization Facility (CNF) Upgrade project. Project approach will address minimum requirements. Delay Mixed Waste Treatment Facility (MWTF) until treatment privatization options are evaluated. Complete Title I and II design for expansion of Landfills V and VII (95-D-405) and continue construction of the Plant Drains Wastewater Treatment Upgrades project. Complete construction of the CWSF II and WETF HEMODs. Complete the title I and II design and start construction of the upgrades to oil dikes 7 and 8. Provide design and construction of general plant projects (GPPs) to improve treatment facilities, meet fire suppression requirements for liquid waste storage facilities, and improve the capability to monitor for low-level waste. Provide planning for outyear GPPs. Complete treatability studies on 25 waste streams and characterize 27 waste streams. Delay LWCF activity due to funding restrictions. ($4,300)	OAK RIDGE RESERVATION Will initiate required environmental impact documentation for CNF Upgrade project. Construction will begin on the Toxic Substances Control Act (TSCA) Containment Upgrade. Design will begin on the TSCA Maintenance building and the Central Neutralization Facility (CNF) support facility. Construction will be initiated on facility upgrades/modifications designed in previous years and completed on general plant projects already under construction. The Environmental Assessment for the TSCA off-gas upgrade project will be completed. ($33,886)

2166

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	K-25	K-25	K-25
	Awarded contract to initiate construction on the K-25 Sanitary Sewer Collection System Rehabilitation project (92-D-188), which will eliminate National Pollutant Discharge Elimination System (NPDES) permit violations caused by hydraulic overload of the collection system during heavy rainfall. The overload causes the system to back up and overflow into the river. There is $2,557,000 capital construction associated with this project, 92-D-188. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Continue construction activities which include upgrading manholes, replacement of collapsed lines, and new lining in repairable sections of the K-25 sewer system. There is $2,846,000 capital construction associated with this project, 92-D-188. It is included in the construction lump sum shown at the end of each operations office narrative section. ($0)	Will complete rehabilitation of the Sanitary Sewer Collection System to eliminate permit violations using prior year funds. ($0)
	Completed Title I and II design of the K-1515-F Lagoon project (93-D-177) needed to meet the Clean Water Act and the Tennessee Water Quality Control Act requirement. The project includes construction of a new treatment basin and permitted discharge for the K-1515 Water Filtration Plant. There is $4,100,000 capital construction associated with this project, 93-D-177. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Complete construction of the K-1515-F Lagoon using FY 1994 funds. ($0)	No activity. ($0)

2167

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Completed design and started construction of the following general plant projects (GPP), K-1423 containment dikes, the K-1400 Fire Sprinkler System, the K-1423 Changehouse, and the K-1420-A waste storage tank improvements. Started design of the K-1036-A polychlorinated biphenyls (PCBs) Upgrade (GPP). Completed construction of the Portal 5 Vehicle Gate. These GPPs provide new or upgraded capabilities to increase efficiency and ensure safe and compliant mixed waste management. In addition to the operating expense shown here, there is $2,278,000 of capital construction associated with these GPP projects. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($916)	Complete construction of the K-1423 containment dikes, 1423 Changehouse, the K-1420-A waste storage tank improvements, the K-01400 Fire Sprinkler System, and the K-1036-A PCB Upgrade. Start and complete design of the Toxic Substances Control Act (TSCA) Containment Upgrade. There is $1,249,000 capital construction associated with these GPP projects included in the lump sum construction total shown at the end of this office's narrative section. ($1,002)	No activity. ($0)
	Completed the conceptual design report (CDR) and began project validation for the Central Neutralization Facility (CNF) Upgrade project to meet stringent regulatory requirements using prior year funds. Deferred Toxic Substances Control Act (TSCA) Incinerator Upgrade project based on latest waste volume projections. ($0)	Individual new facility planning activities combined under the Oak Ridge Reservation Office (above), rather than at each site. ($0)	No activity. ($0)
	The Oak Ridge Reservation Storage Facility (93-D-176, $1,100,000 appropriated) project was deferred. Reduced waste generation rates and waste minimization reduced the need for additional storage buildings at this time. ($0)	No activity. ($0)	No activity. ($0)

2168

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Deferred the Class I low-level waste disposal units for several years due to reduced need. Began revised environmental documentation and Title I design for Class II low-level waste tumulus disposal units to meet DOE Orders for safe management of low-level waste. There is $6,000,000 capital construction associated with this project, 94-D-406. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Begin Title I design for Class II low-level waste tumulus disposal units. In addition to the operating expense shown here, there is $2,400,000 associated with this project, 94-D-406. The capital construction funding is included in the lump sum shown at the end of this office's narrative section. ($250)	Will complete title I and II of Class II low-level waste tumulus disposal units using FY 1995 funds. ($500)
	Completed Title I and II of the Central Neutralization Facility (CNF) Pipeline Extension project (94-D-405). This project will reroute CNF effluent from Poplar Creek to the Clinch River to meet permit conditions. The National Pollutant Discharge Elimination System (NPDES) permit required discharge from CNF to the creek to cease. Began construction of pipeline extension using the appropriation of $1,100,000 for project 94-D-405. The capital construction funding is shown in a lump sum at the end of each operations office narrative section. ($0)	Complete construction of the CNF pipeline extension using FY 1994 funds and begin routing CNF effluent directly to the river, through a new NPDES permitted outfall. ($0)	No activity. ($0)
	OAK RIDGE NATIONAL LABORATORY (ORNL)	OAK RIDGE NATIONAL LABORATORY (ORNL)	OAK RIDGE NATIONAL LABORATORY (ORNL)
	Continued ongoing activities for the general plant projects under construction and support for the identification and pre-construction document development for new general plant projects. Completed construction of the storage facility for waste generated by Nuclear Fuel Services, Inc. In addition to the operating expenses shown here, there is $2,900,000 capital construction associated with this project, 92-D-188.	Continue previous years activities for the projects under construction, and support the identification and pre-construction document development for new general plant projects. There is $269,000 capital construction associated with the GPP project. ($2,074)	No activity. ($0)

2169

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	The capital construction is included in a lump sum at the end of the operations office narrative section. ($2,525)		
	Completed the CDR for the Process Waste Treatment Facility (PWTF), project 92-D-188, to replace the aging process low-level waste treatment plant, which has reached the end of its design life, and maintain compliance with the National Pollutant Discharge Elimination System (NPDES) permit. Completed design criteria for the Melton Valley Storage Tank Capacity Increase (MVSTCI) (project 94-D-404) to allow continuation of ongoing liquid low-level waste operations and meet Federal Facility Agreement requirements. Existing tanks will be filled by the year 2000. Initiated feasibility studies and the preparation of quality assurance, safety, and environmental assessment documents for the MVSTCI project. In addition to the operating expense shown here, there is $9,282,000 capital construction associated with this project, 94-D-404. ($4,100)	Continue Environmental Assessments on the PWTF and MVSTCI project. Complete Title II design and begin long-lead procurement and construction on the MVSTCI project. In addition to the operating expense shown here, there is $21,373,000 capital construction associated with this project, 94-D-404. The capital construction is included in the lump sum at the end of each operations office narrative section. ($200)	Will continue construction of the MVSTCI project,completing the first three tanks and the associated operational procedures and the Operational Readiness Review. Complete environmental assessment on the PWTF project. There is additionally $11,000,000 in capital construction associated with 94-D-404 included in the lump sum at the end of this office's narrative section. ($841)
	Began construction on Phase I of the Process Waste Treatment System (PWTS) upgrade project (92-D-188). Completed Titles I and II design on Phase II project to upgrade old facility for compliant operations until new Process Waste Treatment Facility is built. In addition to the operating expense shown here, there is $1,312,000 capital construction associated with this project, 92-D-188. The capital construction funding is shown as a lump	Complete the PWTS upgrade project. ($200)	This activity supports startup testing and checkout of the modified process equipment. ($100)

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	sum at the end of each operations office narrative section. ($300)		
	Y-12 Plant	Y-12 PLANT	Y-12 PLANT
	Completed systems requirements document and enhanced feasibility study on the Mixed Waste Treatment Facility and design criteria for expansion of Landfills V and VI to provide adequate disposal capacity for Oak Ridge Sites. Completed Title I and II design of the Industrial Waste Compaction Facility (IWCF) (project 93-D-175). The IWCF is needed to reduce the volume of waste which will extend the life of the landfill and provide stable fill. Completed design and started construction of the Plant Drains Wastewater Treatment Upgrades (93-D-174) project to meet Clean Water Act requirements. Began construction of Classified Waste Storage Facility (CWSF) II, completed construction of the CWSF I to meet the Resource Conservation and Recovery Act (RCRA) requirements, and continued consztruction of the West End Treatment Facility (WETF) head end modifications (HEMODs) to reduce the overall quantity of sludge generated and isolate the hazardous constituents into a smaller volume. Started Title I and II design of the upgrade to oil dikes 7 and 8 to meet RCRA requirements for hazardous waste storage. In addition to the operating expense shown here, there is $3,500,000 capital construction associated with project 93-D-174, and $1,800,000 associated with project 93-D-175, in the lump sum total shown at the end of this office's narrative section. ($3,614)	There is in addition to the expense funding shown here, $1,400,000 capital construction is associated with 93-D-174, $1,000,000 is associated with 95-D-405, and $666,000 is associated with GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. Complete Title I and II design for expansion of Landfills V and VII (95-D-405) and continue construction of the Plant Drains Wastewater Treatment Upgrades project. Complete construction of the CWSF II and WETF HEMODs. Complete the Title I and II design and start construction of the upgrades to oil dikes 7 and 8. Provide design and construction of general plant projects (GPPs) to improve treatment facilities, meet fire suppression requirements for liquid waste storage facilities, and improve the capability to monitor for low-level waste. Provide planning for outyear GPPs. Complete treatability studies on 25 waste streams and characterize 27 waste streams. Delay IWCF activity due to funding restrictions. ($807)	Will complete construction of the Plant Drains Wastewater Treatment Upgrades project, 92-D-188 at $1,100,000; start construction of the expansion areas for Landfills V and VI, 95-D-405 at $4,600,000; and will continue construction of the upgrade to oil dikes 7/8 using prior year funds. ($363)

2171

III. New Facilities (Cont'd):
Oak Ridge (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)			
	$11,455	$8,833	$35,690
Capital Equipment	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($422)	No activity. ($0)	The Oak Ridge Operations Office budget provides for capital equipment purchases to support the activities described above. ($450)
	$422	$0	$450
Construction	The Oak Ridge Operations Office budget provides for construction to support the activities described above. ($35,829)	The Oak Ridge Operations Office budget provides for construction to support the activities described above. ($31,203)	The Oak Ridge Operations Office budget provides for construction to support the activities described above. ($20,950)
	$35,829	$31,203	$20,950
Subtotal, Oak Ridge	$47,706	$40,036	$57,090
Richland			
Operating	Managed the Tank Farms Upgrade Program and performed upgrades to Tank Farm electrical, mechanical, instrumentation, waste storage, and waste transfer systems. ($21,880)	Continue to manage the Tank Farms Upgrade program and perform upgrades to Tank Farm electrical, mechanical, instrumentation, waste storage, and waste transfer systems. ($31,160)	Will continue to manage the Tank Farms Upgrade program and perform upgrades to Tank Farm electrical, mechanical, instrumentation, waste storage, and waste transfer systems. ($12,563)
	Completed definitive design of AY/AZ tank farm ventilation upgrades. In addition to operating expenses shown here, there is $1.0 million capital construction associated with this project, 89-D-173, Tank Farm Ventilation Upgrade. The capital construction funding is shown as a lump sum at the end of the Richland Operations Office narrative section. ($800)	Start site construction activities of AY/AZ tank farm ventilation upgrades in support of FY 1996 operation. In addition to the operating expense shown here, there is $300K of capital construction associated with this project, 89-D-173. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($884)	Will complete site construction activities of AY/AZ tank farm ventilation upgrades in support of FY 1996 operation. In addition to the operating expense shown here, there is $800K of capital construction associated with this project, 89-D-173. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,733)

2172

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Started Title II Design, and long-lead procurement activities for the Replacement of the Cross-Site Transfer System (CSTS), 93-D-182. Continued NEPA documentation process. In addition to the operating expense shown here, there is $6,500,000 of capital construction associated with this project, 93-D-172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,200)	Complete definitive design of replacement of the CSTS. Continue long-lead procurement activities and NEPA documentation process. In addition to the operating expense shown here, there is $14,810,000 of capital construction associated with this project, 93-D-172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($627)	Will start construction activities. In addition to the operating expense shown here, there is $19,795,000 of capital construction associated with this project, 93-D-172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($909)
	Initiated development of Final Safety Analysis Report (FSAR) for Aging Waste Transfer Lines. In addition to the operating expense shown here, there is $5,000,000 of capital construction associated with this project, 90-D-172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($500)	Complete definitive design and begin construction of Aging Waste Transfer Lines. In addition to the operating expense shown here, there is $3,819,000 of capital construction associated with this project, 90-D-172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($641)	Will continue construction of Aging Waste Transfer Lines. In addition to the operating expense shown here, there is $2,000,000 of capital construction associated with this project, 90 D 172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($610)
	No activity. ($0)	Conduct conceptual design of major line item upgrades to ventilation, piping, instrumentation, and electrical systems. Begin conreptual design for the Tank Farm Restoration and Safe Operations (TFRSO) project. In addition to the operating expense shown here, there is $1,585,000 of capital construction associated with this project, 95-D 401. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($4,209)	No activity. ($14,975)

2173

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	No activity. ($0)	In addition to the operating expense shown here, there is $1,585,000 of capital construction associated with this project, 95-D-401. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($266)	No activity. ($0)
	Supported 200 East Office Facility. ($61)	No activity. ($0)	No activity. ($0)
	Conducted technology development of organic destruction and down selection, cesium removal by ion exchange with inorganic resins, and strontium removal by ion exchange; examined in-tank separation process options; and developed functional design critieria for the low-level waste pretreatment facility. ($29,270)	Continue process development for Low-Level Waste (LLW) pretreatment including solid/liquid separation, cesium, strontium, and technetium removal. Conduct technical development leading to commercialization of crystalline silico-titanates (CSTs) for potential implementation in the LLW pretreatment facility. Conduct testing of additional wastes to determine the effectiveness of enhanced sludge washing to support sludge pretreatment and TPA milestone (March 1998 evaluation of enhanced sludge washing). Conduct chemical recycle and waste minimization opportunities for pretreatment. ($17,399)	Will conduct process development for LLW pretreatment including solid/liquid separation, cesium, strontium, and technetium removal. Will begin conceptual design of HLW pretreatment facilities. Will conduct testing of additional wastes to determine the effectiveness of enhanced sludge washing to support sludge pretreatment and TPA milestone (March 1998 evaluation of enhanced sludge washing). Since funding levels are below expectations we are implementing innovative approaches, in consultation with the stakeholders, which will help us meet our commitments. Will complete construction and permitting, begin operational readiness reviews, and initial system testing and acceptance for the C-106 project. ($12,366)
	Continued construction, electrical systems upgrades and procurement, including mixer pumps for the 101-AZ retrieval projects. In addition to the operating expense shown here, there is $2,000,000 of capital construction associated with this project, 92-D 177. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,600)	Complete construction and permitting activities for the 101-AZ retrieval projects. In addition to the operating expense shown here, there is $5,000,000 of capital construction associated with this project, 92-D-177. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,373)	Will continue permitting, and begin operational readiness reviews and system testing for the 101-AZ project. Project is funded from prior year carryover. ($101)

2174

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Covered Retrieval Program Management including the development of logic, schedules, program plans, and systems engineering. Continued technology development of enhanced and alternate retrieval systems. Developed the procurement specification for the Long Reach Manipulator (LRM), procured a pilot scale retrieval system, issued the subsurface barrier feasibility study, and developed logic, schedules, and cost estimates for tank closure. Completed preliminary design and began detailed design for the Tank 241-C-106 Sluicing project to resolve the High Heat waste safety issue associated with C-106. Supported the development of Safety and NEPA documentation for the project. Continued development of flexible receiver to safely remove in-tank hardware. ($30,400)	Cover Retrieval Program Management including the development of logic, schedules, program plans, systems engineering, and external reviews. Continue technology development of enhanced and alternate retrieval systems. Evaluate vendors and award contracts to begin the LRM conceptual design, initiate testing of subsurface barriers, write a test plan and procedure for the Tank 241-AZ-101 process test, and update the closure work plan. Begin conceptual design for the Tank 241-C-106 Manipulator Retrieval System project. Begin construction, continue procurement, and permitting activities for the C-106 project. ($30,785)	Will cover Retrieval Program Management including the development of logic, schedules, program plans, systems engineering, and external reviews. Will continue technology development of enhanced and alternate retrieval systems. Will start the LRM Title I design, provide test support and data evaluation for the 101-AZ process test, continue testing subsurface barriers, prepare the document for the initial single-shell tank retrieval project, issue the tank retrieval sequence document, and begin tank closure trade studies. Continue Tank 241-C-106 Manipulator Retrieval System project conceptual design. Since funding levels are below expectations we are implementing innovative approaches, in consultation with the stakeholders, which will help us meet our commitments. ($25,165)
	Completed conceptual design and began preliminary design for the 101-SY portion of the Initial Tank Retrieval System (ITRS) project. Supported the development of Safety and NEPA documentation for the project. There is $7,000,000 capital construction associated with this project, 94-D-407. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Complete preliminary design, begin detailed design, begin long lead procurement, and support permitting activities for the 101-SY retrieval project. In addition to the operating expense shown here, there is $8,680,000 of capital construction associated with this project, 94-D-407. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($3,857)	Will continue procurement and permitting activities and complete detailed design for the 101-SY portion of the ITRS project. In addition to the operating expense shown here, there is $9,400,000 of capital construction associated with this project, 94-D-407. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,475)

2175

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Completed preliminary design and began detailed design for the Tank 241-C-106 Sluicing project to resolve the High Heat waste safety issue associated with C-106. Supported the development of Safety and NEPA documentation for the project. Continued development of flexible receiver to safely remove in-tank hardware. Also supported B-Plant activities. ($4,250)	Begin construction, continue procurement, and permitting activities for the C-106 project. Program transferred to the Office of Nuclear Materials and Facilities Stabilization. ($0)	Will complete construction and permitting, begin operational readiness reviews, and initial system testing and acceptance for the C-106 project. Since funding levels are below expectations we are implementing innovative approaches, in consultation with the stakeholders, which will help us meet our commitments. ($0)
	Developed multi-purpose Processing and Storage Complex, which will be a centrally located, stable, interim storage facility for fuels, capsules, vitrified waste, and Plutonium residuals to allow for easy retrieval. Initiated engineering planning and design, and equipment acquisition. ($600)	No activity. ($0)	No activity. ($0)
	Completed functions and requirements document for the LLW pretreatment facility. Provided technology development information for solid/liquid separation and cesium ion exchange using organic resins. In addition to the operating expense shown here, there is $41,410,000 of capital construction associated with this project, 93-D-183. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($31,455)	Initiate construction of 200 West Area and 200 East Area tanks. Complete NEPA documents for the LLW pretreatment facility. Complete tank design for the MWTF. Begin conceptual design for the LLW pretreatment facility. Conduct detailed design of the 200 East Area tanks for the MWTF. Complete Preliminary Safety Analysis Report for the 200 East and 200 West Area tanks. Initiate and complete conceptual design for Bench Scale Integrated Hot Pilot Plant. Initiate and complete NEPA documents for Bench Scale Integrated Hot Pilot Plant. Initiate Title I and Title II designs for Bench Scale Integrated Hot Pilot Plant. Complete process for the NEPA documentation for the MWTF. Completion of NEPA documentation has delayed the start of construction and the mission is being re-evaluated. If changes occur, appropriate baseline change	Will continue construction of the 200 East Area and 200 West Area tanks for the MWTF. Will complete conceptual design for the LLW pretreatment facility. Will initiate NEPA, Safety Analysis Report, and regulatory/building permits for the LLW pretreatment facility. Will complete Title II design and initiate construction of Bench Scale Integrated Hot Pilot Plant. Will complete final Safety Analysis Report of Bench Scale Hot Pilot Plant. The re-evaluation of the mission of the MWTF should be documented and any baseline changes should be completed during the fiscal year. In addition to the operating expense shown here, there is $31,000,000 of capital construction associated with this project, 93-D-183. The capital construction funding is shown as a lump sum at the end of each operations office narrative section.

2176

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)		documentation will be generated. In addition to the operating expense shown here, there is $80,328,000 of capital construction associated with this project, 93-D-183. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($16,825)	($17,807)
	SOLID WASTE OPERATIONS COMPLEX (SWOC) This Complex consists of three separate projects: Enhanced Radioactive Mixed Waste Storage, Contact-Handled Transuranic Waste (TRU) Retrieval, and the Waste Receiving and Process (WRAP Module 2A. These projects are part of a long-term strategy to ensure that management of solid waste at Richland is environmentally sound and compliant with Washington State laws, federal laws, and U.S. Department of Energy directives. The aforementioned projects allow for the safe storage, retrieval, and treatment of various low-level, low-level mixed, and transuranic waste in preparation for their final disposal. Recent accomplishments include the awarding of the design contract for the Enhanced Radioactive Mixed Waste Storage Facilities. Initiated preliminary Title I design, National Environmental Policy Act (NEPA) documentation, the Preliminary Safety Analysis Report (PSAR), and the permitting related to the RCRA for the Contact Handled TRU Retrieval subproject. In addition to the operating expense shown here, there is $12,300,000 of capital construction associated with this project, 94-D-411. The capital construction funding is shown as a lump sum at the end of each	SOLID WASTE OPERATONS COMPLEX (SWOC) FY 1995 sees the continuation of initial project activities associated with two of the subprojects (Enhanced Radioactive and Mixed Waste storage, and the contact-handled TRU retrieval). In addition to increased design activity a great deal of time will be spent preparing a wide range of safety documentation. This documentation will document, research, and make recommendations with respect to the impacts the projects may have on the surrounding environment. These preliminary analyses are required before construction activities can commence. Major activities planned include initiating preliminary Title I design work and completing NEPA and PSAR activities for the Enhanced Mixed Waste Storage Project. Initiate Title I and Title II design work and complete the PSAR and NEPA activities, associated with the Enhanced Radioactive and Mixed Waste Storage Facility. In addition to the operating expense shown here, there is $35,179,000 of capital construction associated with this project, 94-D-411. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. For the WRAP 2A Facility, discussions	SOLID WASTE OPERATIONS COMPLEX (SWOC) FY 1996 will concentrate on the completion of detailed design activities and the initiation or continuation of construction on the Phase 5 storage subproject. As construction activities progress, operations readiness activities, including additional safety analyses, will be initiated to support startup. Major activities will include completion of the detailed Title II design and will initiate construction work. Will complete Stage 1 of the Safety Assessment. Will continue construction activities and the development of the Final Safety Analysis Report (FSAR). Will initiate equipment development, complete permitting, and will continue preparations for a readiness review and startup support. In addition to the operating expense shown here, there is $5,500,000 of capital construction associated with this project, 94-D 411. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. For the WRAP 2A Facility, discusssions are underway with the stakeholders to privatize the construciton and operation of the facility. Should such a decision be made, formal notification

2177

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	operations office narrative section. ($3,450)	are underway with the stakeholders to privatize the construction and operation of the facility. Should such a decision be made, formal notification to Congress will be made. ($3,079)	to Congress will be made. ($3,600)
	WASTE RECEIVING AND PROCESSING FACILITY, MODULE 1 Initiated Construction of WRAP 1 to provide the characterization and segregation necessary to prepare and certify contact-handled transuranic drum waste for permanent disposal or further processing. The facility will also certify standard waste boxes for disposal. WRAP Module 1 represents the cornerstone of Hanford waste cleanup efforts. Initial project activities have been ongoing including the completion of all design work. Recent accomplishments include the initial construction work and procurement of long-lead time items. Continued engineering activities and technology development in support of construction effort. In addition to the operating expense shown here, there is $17,700,000 of capital construction associated with this project, 91-D-171. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($6,360)	WASTE RECEIVING AND PROCESSIDNG FACILITY, MODULE 1 FY 1995 sees the continuation of project construction activities, all procurement efforts, and engineering efforts including, but not limited to, surveillance and inspection of field activity. In addition to the operating expense shown here, there is $3,995,000 of capital construction associated with this project, 91-D-171. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($4,866)	WASTE RECEIVING AND PROCESSING FACILITY, MODULE 1 FY 1996 will concentrate on the continuation of construction. As construction activities progress towards completion, operations readiness activities, including additional safety analyses, will be initiated to support the startup of the facility. Major activities will include the completion of the construction for the WRAP 1 facility and will issue the FSAR. Project is funded from prior year carryover. ($6,200)

2178

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Completed annual soil discharge plan. Increased pace for submission of WAC 173-216 permit applications. Increased funding is due to significant increase in the WAC 173-216 permit applications cost. ($24,534)	Revise and reissue the Sampling Analysis Plan (SAP) to reduce the list of potential contaminants being analyzed to coincide with the requirements of WAC 173-216 permits issued by Washington State Department of Ecology. Complete upgrades for all Phase I liquid effluent streams. Increase discharges of untreated liquid to soil columns in accordance with TPA Milestone M-17. ($36,786)	Will revise and reissue the Sampling Analysis Plan (SAP) to reduce the list of potential contaminants being analyzed to coincide with the requirements of WAC 173-216 permits issued by Washington State Department of Ecology. Will complete upgrades for all Phase I liquid effluent streams. Will cease discharges of untreated liquid to soil columns in accordance with TPA Milestone M-17. ($33,800)
	Completed 200 and 300 Area Treatment Effluent Disposal Facilty (TEDF) operating support for construction and initiated readiness activities. Completed CDR and pilot plant testing for Phase II effluent TEDF. Finalized miscellaneous effluent stream permits and initiated activities for final disposition. Completed 200 Area Effluent Treatment Facility (ETF) operation support for construction and pilot plant testing, conduct ORR, and submit required permits. Continued Liquid Effluent Retention Facility (LERF) operations. Increase in funding is due to increased scope associated with construction as these projects were completed. In addition to the operating expense shown here, there is $1,200,000 of capital construction associated with the 200 East Office Facility. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($0)	Continue ETF test operations and begin processing LERF inventory per TPA milestone M-17. continue programmatic oversight and monitoring of 200 Area liquid effluent activities to ensure permit compliance and verification of facility processes. continue support of 200 Area TEDF and LERF operations. Will complete construction and begin operations at the 200 Area and 300 Area TEDF. Complete Best Available Technology/All Known Available and Reasonable Technology (BAT/AKART) implementation in the 200 Area. Continue to support permitting, staffing, operation and maintenance of the 300 Area TEDF. Continue evaluating tritium treatment status. Receive, store, monitor, sample, transport, and upgrade the piping system for radioactive liquid waste from the 300 Area PNL facilities to 200-E double-shell tanks via liquid waste tank cars (LWTC) as well as provide procurement, maintenance, decontamination, certification, and modification of LWTC for continual safety operations. Investigate alternative process methods to reduce the 300 Area Waste, and install controls to track incoming liquid wastes per acceptance criteria. In	Will begin operating ETF and continue to support 200- and 300-Area TEDF, 340 Facility, 307 Basins, and LERF. Will continue evaluating tritium treatment status per TPA. Will support 340 Facility secondary containment project. Will investigate and define new feed to ETF and 200-Area TEDF. Receive, store, monitor, sample, transport and upgrade the piping system for radioactive liquid waste from the 300 Area PNL facilities to 200-E double-shell tanks via liquid waste tank cars (LWTC) as well as provide procurement maintenance, decontamination, certification, and modification of LWTC for continual safety operations. There is $4,000,000 capital construction associated with this GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. Since funding levels are below expectations we are implementing innovative approaches, in consultation with the stakeholders, which will help us meet our commitments. ($1,100)

2179

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)		addition to the operating expense shown here, there is $7,100,000 of capital construction associated with 95-D-408, Phase II Effluent Treatment and Disposal. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($1,113)	
	Continued Hanford Environmental Compliance (HEC) construction projects in support of FY 1995 TPA milestone including completing PFP LETF construction, continued BAT/AKART implementation at 200 Area, completed 200 Area ETF as well as 200 and 300 Area TEDF construction. Decrease in funding is due to decreased workscope required. In addition to the operating expense shown here, there is $11,056,000 of capital construction associated with this project, 89-D-172. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($3,024)	Complete all HEC construction projects in support of FY 1995 TPA milestone including closeout of W-007 B-Plant condensate treatment facility, the W-049 200 Area Treated Effluent Disposal Facility, BAT/AKART implementation at 200 and 300 Area, the 200 and 300 Area TEDF, and the Effluent Treatment Facility. The reduction in funds does not affect scope due to available funds carried over from prior years. ($1,296)	All work is scheduled to be completed in FY 1995. No funds are required for this fiscal year. ($0)
	Continued operation of the 222-S and Analytical Chemistry Laboratories, and planned for operation of the Waste Sampling and Characterization Facility (WSCF). WSCF and base funding of "ready-to-serve" capacity of 222-S and Analytical Chemistry Laboratories formerly funded via a service assessment. ($46,426)	Continue base funding operation of the 222-S, and WSCF Laboratories. Initiate operation and fund base activities at WSCF. Activities include: program management and site-wide integration, laboratory upgrades, and laboratory operations. ($53,509)	Will continue base funded operation of the 222-S and Analytical Chemistry Laboratories and WSCF. Activities include: program management and site-wide integration, laboratory upgrades, and laboratory operations. ($45,400)

2180

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Completed construction of HVAC/electrical upgrades for the 222-S Laboratory. Completed definitive design and begin construction of the 222-S Laboratory Radioactive Waste Transfer Lines. Conducted planning and engineering studies for new laboratory facilities, including support facilities. In addition to the operating expense shown here, there is $2,766,000 of capital construction associated with this project, 93-D-181. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($600)	Supports upgrade of wastelines from 222-S to 219-S. In addition to the operating expense shown here, there is $3,300,000 of capital construction associated with this project, 93-D-181, and $2,000,000 assocaited with 95-D-407. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($2,039)	Will continue new facilities planning efforts. ($800)
	Initiated studies on vitrified mixed low-level radioactive waste forms. Start development of high capacity melter for use in low-level vitrification facility. Maintained Grout Treatment Facility within safety and regulatory compliance envelope for restart, as required by TPA, until new tanks are on line. Completed preliminary assessment. ($31,047)	Conduct low-level Waste vitrification (LLW) melter testing with simulants. Complete the Grout Treatment Facility emergency restart plan. Initiate Conceptual Design Report (CDR) for the LLW Vitrification Facility. Select architect-engineer for the CDR for the LLW Vitrification facility. Complete pretreated waste form specification. Initate NEPA, SAR and regulatory/building permits for the LLW Vitrification Facility. Initiate engineering studies for the LLW Vitrification process. Maintain Grout Treatment Facility in cold standby condition. ($51,324)	Will continue to complete the Conceptual Design Report and initiate independent cost estimate for the LLW Vitrification Facility. Will complete melter feasibility studies. Will select reference melters. Will determine glass waste form physical configuration for the LLW Vitrification Facility. Will develop the vitrified product specification. Will finalize negotiations with the Architect-Engineer to award Title I and Title II design for full scale LLW Vitrification Facility. Will maintain Grout Treatment Facility in cold standby condition. Will continue with NEPA, SAR, and regulatory permits for the LLW vitrification project. Since funding levels are below expectations we are implementing innovative approaches, in consultation with the stakeholders, which will help us meet our commitments. ($26,949)

2181

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	In addition to maintenance activities at the T-Plant/340 Facilities, completed the ORR for building 221-T. Recertify four Liquid Waste Tank Cars (LWTCs) at the 340 Liquid Waste Handling Facility. Completed engineering studies associated with three candidate FY 1995 line items: T-Plant Wastewater Systems Modification to provide for the discontinuance of the T-Plant wastewater streams to nearby soil column sites, the Secondary Containment and Leak Detection Project to provide active T-Plant tank and piping systems secondary containment and leak detection, and the 340 Wastewater System Improvements to provide an additional LWTCs and additional storage tanks, pumps and agitators in the 340 Facility. ($23,877)	Restart full scale waste and decontamination services: decontamination, interim storage, testing, repair, and disposal of contaminated equipment, as well as safety training improvements, procedural review and revision, long-term planning, customer development and tracking, and process engineering. Implement and maintain waste and decontamination service safety assurance activities. Support T-Plant secondary containment and leak detection activities. Continue Phase 1 Canyon cleanout. ($36,610)	Will continue providing T-Plant safe operations, regulator compliance, maintenance, and assessment. Will continue maintaining LWTC and providing decontamination and repair services. Will initiate T-Plant Tank System Upgrade Project design and advanced CDR for T-Plant Ventilation Upgrade Project. Will continue Phase 1 canyon cleanout. In addition to the operating expense shown here, there is $2,100,000 of capital construction associated with this project, 96-D-405. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($27,700)
	HIGH-LEVEL WASTE (HLW)	HIGH-LEVEL WASTE (HLW)	HIGH-LEVEL WASTE (HLW)
	Provided EPA and Ecology with results of evaluation and a decision to proceed or not to proceed with the vitrification project. Activity was funded under Hanford Waste Vitrification Project in FY 1994. ($0)	Initiate engineering trade studies on size and types of waste package. Initiate HLW melter candidate selection engineering studies. Initiate results of previous engineering for development of waste glass formulation, and identification of HLW process options to support melter systems development testing. Initiate preparation of functions and requirements document for HLW Vitrification Facility. ($7,568)	Will develop and evaluate waste glass formulation. Will continue to identify, test, and evaluate HLW process and equipment options to support melter system development testing. Will complete functions and requirements document for the HLW Vitrification facility. Will complete engineering trade on size and type of waste package. Will initiate NEPA, SAR, and regulatory/building permits for the full scale HLW Vitrification facility. Will select Architect-Engineer contractor to perform conceptual design. Will initiate conceptual design for the full scale HLW Vitrification facility. Since funding levels are below expectations we are implementing innovative approaches, in consultation with the

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III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)			stakeholders, which will help us meet our commitments. ($10,414)
	SOLID WASTE STORAGE AND DISPOSAL This activity included funding for the operation, maintenance, monitoring, surveillance, and waste characterization activities necessary to maintain safe, compliant conditions in preparation for the receipt and storage of waste in the Central Waste Complex (CWC), Low-Level Burial Grounds (LLBG), Transuranic Storage and Assay Facility (TRUSAF), and the Non-Radioactive Dangerous Waste Storage Facility. In addition, this activity included the funding for required strategic planning activities, as well as, a variety of budget exercises. The completion of these activities ensures that operations storage and disposal facilities are operated in compliance with RCRA and the requirements specified by agreements between Hanford and the State of Washington. This included portions of the Washington Administrative Code (WAC) and the Tri-Party Agreement (TPA). Recent accomplishments included (1) direct funding of the LLBG and CWC base operations including but not limited to, building surveillance and monitoring, Health Physics support, equipment maintenance and calibration facility utility costs and upgrades and engineering studies through development of functional design criteria. Initiated feasibility studies, planning, and scheduling necessary to support the LLBG closures. Procurement of equipment to demonstrate void space compaction and completed engineering	SOLID WASTE STORAGE AND DISPOSAL Continue operations, monitoring, maintenance, surveillance activities as discussed in previous year. Continue to direct fund the LLBG and CWC base operations including, but not limited to, building surveillance and monitoring, Health Physics support, equipment maintenance and calibration facility utility costs and upgrades, and engineering studies through development of functional design criteria. Continue feasibility studies, planning and scheduling necessary to support the LLBG closures. Continue development of SWITS database. Open, inspect, and characterize the 10 drums retrieved in FY 1994 in support of the design and construction of the full-scale retrieval (SWOC subproject). Continue retrieving TRU drums and characterizing those retrieved in previous years. In-situ characterization of remaining trenches will be continued. Continue operations at the 616 Non-Radioactive Dangerous Waste Facility for Hazardous Waste sent offsite for treatment/disposal. Continue base funding of TRUSAF operations for TRU Waste Management and Storage. Complete and issue the current fiscal year work plan, the multi-year program plan, and other planning documents critical to baselining the Solid Waste Program. This work reduces the duplication of effort across the site by ensuring planning is properly coordinated. ($28,458)	SOLID WASTE STORAGE AND DISPOSAL Will continue operations, monitoring, maintenance, surveillance activities as discussed in previous year. Will continue to direct fund the LLBG and CWC base operations including, but not limited to, building surveillance and monitoring, Health Physics support, equipment maintenance and calibration facility utility costs and upgrades, and engineering studies through development of functional design criteria. Will continue feasibility studies, planning and scheduling necessary to support the LLBG closures. Will continue development of SWITS database. Will continue to retrieve TRU drums and characterizing those retrieved in previous years. Will continue operations at the 616 Non-Radioactive Dangerous Waste Facility for Hazardous Waste sent offsite for treatment/disposal. Will continue base funding of TRUSAF operations for TRU Waste Management and Storage. Will complete and issue the current fiscal year work plan, the multi-year program plan, and other planning documents critical to baselining the Solid Waste Program. This work reduces the duplication of effort across the site by ensuring planning is properly coordinated. ($32,000)

III. New Facilities (Cont'd):
Richland (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	study to assess burial ground closure design alternatives. Continued development of Solid Waste Issue Tracking System (SWITS) database; (2) retrieved approximately 120 drums in support of design of the full scale CH-TRU retrieval SWOC subproject. Initiated in-situ characterization of remaining trenches; and (3) continued operations at the 616 Non-Radioactive Dangerous Waste Facility for Hazardous Waste sent offsite for treatment/disposal. Continued base funding of TRUSAF operations for TRU Waste Management and Storage. Completed and issued the current fiscal year work plan, the multi-year program plan, and other planning documents critical to baselining the Solid Waste Program. This work reduces the duplicaton of effort across the site by ensuring planning is properly coordinated. ($39,525)		
	$300,859	$334,674	$275,667
Capital Equipment	The Richland Operations Office budget provides for capital equipment purchases to support the activities described above. ($16,066)	The Richland Operations Office budget provides for capital equipment purchases to support the activities described above. ($12,230)	The Richland Operations Office budget provides for capital equipment purchases to support the activities described above. ($10,374)
	$16,066	$12,230	$10,374
Construction	The Richland Operations Office budget provides for construction to support the activities described above. ($109,505)	The Richland Operations Office budget provides for construction to support the activities described above. ($170,460)	The Richland Operations Office budget provides for construction to support the activities described above. ($78,422)
	$109,505	$170,460	$78,422

III. New Facilities (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Richland	$426,430	$517,364	$364,463
Rocky Flats			
Operating	Continued development of Mixed Waste treatment units required by the Comprehensive Treatment and Management Plan (CTMP)/Site Treatment Plan (STP). Specific activities include: initiate National Environmental Policy Act (NEPA) documentation, Conceptual Design Report (CDR) and hazardous classification for the five CTMP/STP treatment systems. Continued planning for other new facilities. Continued planning and design of General Plant Projects (GPPs). ($1,489)	Continue New Facilities Planning activities for the Mixed Waste treatment systems proposed by the Rocky Flats Environmental Technology Site STP. Complete 2 GPPs and begin 2 other GPPS. Support other ongoing GPP activities. There is $912,000 capital construction associated with GPPs. The funding is shown as a lump sum at the end of each operations office narrative section. ($723)	Will continue New Facilities Planning activities for the Mixed Waste treatment systems required by the STP Compliance Order. Will continue planing for other new facilities. Will continue all GPP activities. In addition to the operating expense shown here, there is $1,000,000 capital construction associated with the GPP effort included in the lump sum at the end of this operations office narrative section. ($1,500)
	Continued support for upgrades to the Sewage Treatment Plant (90-D-126). Completed Phase 1 upgrade construction, completed Phase 2 Title I design, and initiated Phase 2 Title II design. Line item funds for these activities were carried over from FY 1992. ($200)	Continue construction upgrades to Sewage Treatment Plant. Complete Phase 2 Title II design and initiate Phase 2 construction. ($230)	Will continue Phase 2 construction and begin Phase 3 Title I design. ($450)
	Initiated and completed Title I and II design and initiated permitting for the construction of a new Sanitary Landfill (92-D-188) at Rocky Flats to meet Interagency Agreement (IAG) milestones for the closure of the existing landfill. In addition to the operating expense shown here, there is $5,556,000 associated with this project. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($536)	Initiate and complete construction of the new Sanitary Landfill at Rocky Flats to meet IAG milestones for closure of the existing landfill. ($201)	Will obtain operations permits, conduct Operational Readiness Review, and begin operation of Cell I of the New Sanitary Landfill. ($290)

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III. New Facilities (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Awarded Architect-Engineer (A/E) contract and initiated Title I design for Phase 1 of the Building 374 (B-374) Liquid Waste Treatment Facility Upgrades (93-D-178). In addition to the operating expense shown here, there is $1,000,000 capital construction associated with this project, shown in a lump sum at the end of this operations office narrative section. ($311)	Continues support of Building 374 upgrades. Complete Title I design for Phase 1, initiate and complete Title I design for Phase 2, and initiate Title II design for Phase 2 and Title I design for Phase 3 of B-374 Liquid Waste Treatment Facility Upgrades. There is $3,300,000 capital construction associated with this project. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($750)	Will complete Title I design and initiate Title II design for Phase 3 and will begin construction for Phase 1 and 2 of B-374 Liquid Waste Treatment Facility Upgrade. There is $3,900,000 capital construction associated with this project. ($750)
	Completed Conceptual Design, initiated preparation of design criteria, and continued preparation of NEPA and Safety Documentation for the CTMP Building 374/774 Sludge Immobilizaton System (96-D-402). ($0)	Complete the design criteria and continue preparation of NEPA and Safety Documentation for the CTMP Building 374/774 Sludge Immobilization System. ($350)	Will initiate and complete Title I design and complete and obtain approval of NEPA and Safety Documentation for the CTMP Building 374/774 Sludge Immobilization System. In addition to the operating expense shown here, there is $1,500,000 capital construction associated with this project, 96-D-402. The capital construction funding is included in the lump sum shown at the end of each operations office narrative section. ($500)
	No activity. ($0)	Complete the design criteria and continue preparation of NEPA and Safety Documentation for the CTMP Immobilization of Miscellaneous Waste System (96-D-401). ($0)	Will initiate and complete Title I design and complete and obtain approval of NEPA and Safety Documentation for the CTMP Immobilization of Miscellaneous Waste System. In addition to the operating expenses shown here, there is $1,400,000 capital construction associated with this project, 96-D-401. The capital construction is included in the lump sum shown at the end of each operations office narrative section. ($500)
	$2,536	$2,254	$3,990

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III. New Facilities (Cont'd):
Rocky Flats (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction	The Rocky Flats Field Office budget provides for construction to support the activities described above. ($6,556)	The Rocky Flats Field Office budget provides for construction to support the activities described above. ($4,212)	The Rocky Flats Field Office budget provides for construction to support the activities described above. ($7,800)
	$6,556	$4,212	$7,800
Subtotal, Rocky Flats	$9,092	$6,466	$11,790
Savannah River			
Operating	In accordance with the Federal Facilities Compliance Act (FFCAct), the Conceptual and Draft Site Treatment Plans were prepared (10/93 and 8/94) to describe the development of treatment, capacities and technologies for mixed waste. DOE announced its intent to prepare an Environmental Impact Statement for waste management activities at the Savannah River Site. ($836)	Information presented in the FFCAct Final Site Treatment Plan (due February 1995) and the Waste Management Environmental Impact Statement (final is scheduled to be issued June 1995) will serve to define the scope of the Hazardous Mixed Waste and Transuranic Waste Facilities and the timing expansion. ($0)	Will enter into a Consent Order with South Carolina Department of Health and Environmental Control regarding the treatment of mixed waste. ($0)
	Commenced Solid Waste Disposal Facility Performance Assessment (SWDF PA) System, TRU enclosures, and compactor and Building 724-7E vent upgrades. ($1,018)	Complete construction of SWDF PA system, TRU enclosures and compactor and Building 724-7E vent upgrades. ($1,067)	Will develop functional performance requirements, functional design requirements, and detailed design for reactor TRU storage. There is $500,000 capital construction associated with this GPP. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($950)

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III. New Facilities (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Began independent, fixed price study to determine appropriate type of low-level waste disposal and determine what improvements should be made to the LLW disposal vaults based on the performance assessment and new cost savings initiatives. ($714)	Complete low-level waste disposal study, Functional Performance Requirements (FDR), Functional Design Criteria (FDC), and conceptual design report. Develop RFP for design/build subcontract. In addition to the operating expense shown here, there is $300,000 associated with this project, 94-D-417. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($741)	Will initiate lump sum procurement and begin detailed design using request of $2,704,000 for capital construction for project 94-D-417. ($300)
	Initiated and completed Title II design on new Solvent Storage Tanks. In addition to the operating expense shown here, there is $1,500,000 capital construction associated with this project, 94-D-416. The capital construction funding is shown as a lump sum at the end of each operations office narrative section. ($540)	Commence construction of new Solvent Storage Tanks using $1,700,000 appropriation in addition to the operating expenses shown here. ($789)	Will complete construction, perform operational readiness review, and startup testing, and turn over to operations. ($1,000)
	Continued construction of the Consolidated Incineration Facility with the appropriation of $2,169,000 for capital construction on project 83-D-148. Awarded the subcontract for trial burns and developed the scope of the Operational Readiness Review. ($11,905)	Complete construction, and continue the Operational Readiness Review development and startup preparations for the Consolidated Incineration facility. There is $6,000,000 capital construction associated with this line item. ($18,218)	Will complete the Operational Readiness Review and trial burns for the Consolidated Incineration facility. Operation of the facility is accounted for in Facility Operations budget. There is $1,000,000 capital construction associated with this project. ($2,650)
	Conducted Operational Readiness Review and transferred the vaults to Facility Operations and Maintenance budget and commences operation. ($10)	No activity. ($0)	No activity. ($0)

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III. New Facilities (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Defered Hazardous Waste/Mixed Waste (HW/MW) treatment building project pending the outcome of the site Treatment Plan. Responded to Notice of Violations for HW/MW Disposal Vaults RCRA Part B permit. Began the performance assessment for the Disposal Vaults. ($209)	Continue limited support of the Radiological Performance Assessment for the HW/MW Disposal Vaults. ($127)	Will continue limited support of the Radiological Performance Assessment for the HW/MW Disposal Vaults. ($50)
	Rebaselined the Low Activity TRU Waste facility to include TRU retrieval activities only. Prepared functional performance requirements and functional design criteria. ($2,009)	Perform procurement and installation activities and Title I design related to the TRU Waste Retrieval. ($270)	Will commence startup planning and operational readiness preparations related to the TRU waste retrieval. ($500)
	New Sanitary Landfill is placed on hold. Savannah River Site, South Carolina Department of Health and Environmental Control, and Three Rivers Solid Waste Authority to continue planning to site a regional sanitary landfill on the SRS with SRS as a customer. ($1,001)	No activity. ($0)	No activity. ($0)
	NEW WASTE TRANSFER FACILITY (NWTF)	NEW WASTE TRANSFER FACILITY (NWTF)	NEW WASTE TRANSFER FACILITY (NWTF)
	Initiated system-level testing, developed operations and maintenance testing procedures. Reduced activities reflect a revised system need date of early FY 1996 (85-D-159). The facility will be necessary to support startup and operation of the DWPF. ($4,588)	Continue startup activities using carryover funds to meet revised need date. Increased effort is primarily operating expense funded for training and procedure development. Complete NWTF radioactive waste transfer tie-ins to F and H Tank Farms, and Defense Waste Processing Facility (DWPF). Complete Operational Readiness Review. Complete hot run testing. ($9,098)	Will commence operation of NWTF to support DWPF startup and interarea (F and H) waste transfers. ($3,927)

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III. New Facilities (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	REPLACEMENT HIGH-LEVEL WASTE EVAPORATOR (RHLWE) Completed Title II design. Construction of RHLWE continued (89-D-174). Completed structural steel placement. Majority of construction site cleared as a non-radiologically Controlled area. In addition to the operating expense shown here, there is $12,974,000 capital construction associated with this project, 89-D-174. The capital construction funding is included in a lump sum at the end of this office's narrative section. ($5,245)	REPLACEMENT HIGH-LEVEL EVAPORATOR (RHLWE) Continue construction to receive evaporator vessel and complete subcontracts for roofing and siding. RHLWE is needed to replace outdated, non-compliant evaporator and to handle added waste flow following startup of the DWPF. There is $13,000,000 capital construction associated with this project. ($2,062)	REPLACEMENT HIGH-LEVEL EVAPORATOR (RHLWE) Will continue construction including gravity drain line within the Radiologically Controlled Area. There is $11,500,000 capital construction associated with this project, 89-D-174. ($4,241)
	NEW FACILITY PLANNING - LIQUID WASTE Completed Tank Farm Services Upgrade Conceptual Design Report (CDR), Tank Farm Storm Water Safeguards functional Design Criteria (FDC) and Functional Performance Requirements (FPR). Sampling/monitoring upgrades FPR. These facilities are needed to maintain safe operations as treatment activities in the Tank Farms increase and older systems must be replaced. ($1,143)	NEW FACILITY PLANING - LIQUID WASTE Complete CDR and FDC for sampling/monitoring upgrades. Develop FPR and FDC for Benzene Abatement and Tank Farm support services projects. There is $1,500,000 capital construction associated with these GPPs, and included in the lump sum total at the end of this office's narrative section. ($459)	NEW FACILITY PLANNING - LIQUID WASTE Will complete CDR of Tank Farm stormwater system upgrade. Will complete CDR for Benzene Abatement. There is $3,000,000 capital construction associated with these GPPs. ($1,409)
	TANK FARM SERVICES UPGRADE No activity. ($0)	TANK FARM SERVICES UPGRADE No activity. ($0)	TANK FARM SERVICES UPGRADE (96-SR 161) Will initiate design activities for replacing air, water and steam lines for waste tanks 29, 31, 35, and 36. East Hill Cooling will be upgraded. These improvements are needed to maintain personnel safety and protect the environment. In addition to the operating expense shown here, there is $3,315,000 capital construction associated with this project, 96 D 403. ($421)

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III. New Facilities (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	WASTE REMOVAL Continued design and construction of additional HLW removal facilities (93-D-187). Facilities remove sludge from waste tanks which will then be processed by Extended Sludge Processing (ESP) as feedstock for Defense Waste Processing Facility (DWPF). Salt solution is fed to In-Tank Precipitation (ITP). Continued construction with $3,000,000 appropriation for project 93-D-187, which is included in the lump sum total at the end of this narrative section. ($43,973)	WASTE REMOVAL Continue design and construction of additional HLW removal facilities supporting salt removal, required for support of continuous In-Tank Precipitation and evaporator operations. Continue construction of service upgrade activities. Complete control room construction subcontract. ($8,305)	WASTE REMOVAL Will continue design and construction of HLW removal facilities on salt tanks and continued ITP and evaporator operations through turnover of Tank 25 to Salt Removal and continued design and construction for other salt tanks. ($8,272)
	DIVERSION BOX/PUMP PIT CONTAINMENT Continued construction (87-D-181). Project will ensure high attainment of waste transfer by providing weather protection, which will support transfer box maintenance. Weather protecting and other systems provided will increase operator safety by minimizing potential for spread of contamination. ($10B)	DIVERSION BOX/PUMP PIT CONTAINMENT Complete construction and begin operation. ($495)	DIVERSION BOX/PUMP PIT CONTAINMENT No activity. ($0)
	SPENT NUCLEAR FUEL (SNF) No activity. ($0)	SPENT NUCLEAR FUEL (SNF) No activity. ($0)	SPENT NUCLEAR FUEL ($NF) Will provide development and evaluation of Demonstration Dry Storage Technology and Interim Dry Storage Facility Project. Will provide FY 1998 line item/MSA support for Interim Dry Storage Demonstration Facility. Facility is required for continued safe storage of SNF pending disposal in a geologic repository. ($6,300)

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III. New Facilities (Cont'd):
Savannah River (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	$73,299	$41,631	$30,020
Construction	The Savannah River Operations Office budget provides for construction to support the activities described above. ($21,780)	The Savannah River Operations Office budget provides for construction to support the activities described above. ($47,325)	The Savannah River Operations Office budget provides for construction to support the activities described above. ($41,719)
	$21,780	$47,325	$41,719
Subtotal, Savannah River	$95,079	$88,956	$71,739
New Facilities	$664,834	$708,786	$566,040

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: Defense Waste Processing Facility

The Savannah River Site (SRS) has been operating a nuclear fuel cycle since the early 1950's. Thirty-four million gallons of High-Level Waste produced by this cycle is stored in 51 tanks in the form of liquids, salts, and sludges. This waste needs to be removed from the existing tanks and to provide a safer storage form of the waste. Waste pretreatment activities in the SRS tank farms will separate the waste into a high activity fraction and a low activity fraction. The high activity fraction will be vitrified with borosilicate glass and canistered for eventual disposal in a Federal Repository. The low activity fraction will be stabilized in a composite of cement, flyash, and blast furnace slag designated "saltstone" and disposed onsite in above ground concrete vaults. The Defense Waste Processing Facility (DWPF) is comprised of both vitrification and saltstone facilities.

This activity includes the management, operation and maintenance costs for the DWPF at the Savannah River Operations Office. During the past several years, internal and external reviews have led to several technical and budgetary adjustments to this project. System testing and cold chemical runs of the DWPF have also led to discoveries that additional work must be accomplished before the DWPF can become operational. An integrated High-Level Waste System Plan has now been put in place to better manage this, and other related projects. The DWPF hot startup is scheduled for FY 1996.

The benefits of this activity include providing a safer form of the high-level waste while it is stored pending opening of the Federal Repository. Another benefit is this facility will provide real-time operating experience for use by other offices, such as Richland and Idaho, in determining the best designs for vitrification facilities at these locales, if needed. Failure to fund these activities would further delay the start of hot operations, and jeopardize relationships with the State of South Carolina.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

II. A. Summary Table: Defense Waste Processing Facility

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Defense Waste Processing Facility	$ 256,851	$ 234,648	$ 178,651	$ -55,997
Total, Defense Waste Processing Facility	$ 256,851	$ 234,648	$ 178,651	$ -55,997

II. B. Laboratory and Facility Funding Table: Defense Waste Processing Facility

Savannah River Site	$ 256,851	$ 234,648	$ 178,651	$ -55,997
Total, Defense Waste Processing Facility	$ 256,851	$ 234,648	$ 178,651	$ -55,997

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Defense Waste Processing Facility			
Defense Waste Processing Facility			
Operating	PROGRAM SUPPORT Prepared procedures to implement DOE Order 5700.6C. Performed quality assurance audits on vendors related to HLW acceptance activities. Continued support in the areas of environment, safety and health, emergency preparedness, and engineering services. Implement new Quality Assurance Requirements Document, RW-0333P. ($17,990)	PROGRAM SUPPORT Assume lead responsibility in audits of onsite and offsite suppliers providing materials and service for vitrification. Complete waste qualification runs, self assessment and compliance assessments to assure implementation of procedures and compliance of waste form with Waste Acceptance Product Specifications. Implement a full Health Protection Program. ($27,934)	PROGRAM SUPPORT Will provide continuous, around the clock oversight of DWPF Radioactive operations. DWPF-Quality Assurances (QA) resources will be dedicated to QA self assessments, interaction with oversight organizations and reviews of the Waste Form Production Records. ($23,638)
	VITRIFICATION Continued preoperational and startup activities, including integrated melter offgas testing, canister decontamination system testing, and remote operations systems tests. Develop operating procedures and all training required for radioactive startup. Began and completed melter heatup, during which the melter is heated to normal operating temperatures, melter operations are controlled by the plant distributed control system, and non-radiological test canisters are provided. ($158,958)	VITRIFICATION Commence and complete waste qualification runs. This phase will demonstrate that the facility can produce glass that meets the specifications set by EM for HLW acceptance, and validates facility process control hardware and administrative programs. Success of melter heatup and waste qualification runs will dictate extent of any additional modifications, change to total estimated cost, and types of funds required in FY 1996. Startup testing and other tasks required to prepare the Vitrification Facility for radioactive operation in December of 1995 will continue. ($148,864)	VITRIFICATION The Vitrification and Late Wash startup test program will be concluded, and radioactive operations will begin. Will complete M&O ORR and DOE ORR. Initial operations will be on one waste stream. Midway in FY 1996, Late Wash will be operational supporting full DWPF operations. Approximately 90 canisters w be poured in FY 1996. ($131,724)

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III. Defense Waste Processing Facility (Cont'd):
Defense Waste Processing Facility (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	SALTSTONE Continued to operate Saltstone Facility intermittenly because of delays in the ITP startup program. Provided technical support to determine capability and cost of site closure and upgrade program logic controllers. Completed preparation of Radiological Performance Assessment. ($14,868)	SALTSTONE Activities will continue to ensure readiness to process the radioactive salt solution to be transferred from ITP. The saltstone operating schedule is to operate the process once per month until ITP startup. ($9,932)	SALTSTONE Will continue routine operations, technical, program support, and SRTC support activities. Will continue technical support to renew saltstone solid waste disposal site permit for disposal vaults. Will begin Vault #2 Construction. ($17,899)
	GENERAL PLANT PROJECTS Continued to support day-to-day operational requests of less than $250K each. ($0)	GENERAL PLANT PROJECTS Support day-to-day operational activities with $500,000 GPP, included below. ($0)	GENERAL PLANT PROJECTS Will continue to support day-to-day operational GPP, estimated at $1,540,000. ($0)
	NEW FACILITY PLANNING Began evaluation of stacked canister alternate design for Glass Waste Storage Building #2. ($1,525)	NEW FACILITY PLANNING Complete alternate design proposal for Salt Process Cell (SPC) Benzene Abatement project. DOE will approve conceptual design for this project. Complete functional performance requirements for Failed Equipment Storage Vault #3 through #6. ($824)	NEW FACILITY PLANNING No activity. ($0)
	$193,341	$187,554	$173,261
Capital Equipment	No activity. ($0)	The Defense Waste Processing Facility budget provides for capital equipment purchases to support the activities described above. ($1,536)	The Defense Waste Processing Facility budget provides for capital equipment purchases to support the activities described above. ($3,850)
	$0	$1,536	$3,850

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III. Defense Waste Processing Facility (Cont'd):
Defense Waste Processing Facility (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction	DWPF LINE ITEM		
	Completed Revision 11 of the DWPF FSAR. Responded to findings from Office of Nuclear Safety Technical Review which may potentially require additional safety modifications.	Complete Revision 12 of the DWPF FSAR to address hazards of full radioactive operations of DWPF. FSAR strategy changed in FY 1994 resulting in deletion of an interim revision of the FSAR. Revision 12 will contain contents of FSAR proposed as Revision 13 in FY 1995 Congressional submission.	Will complete any additional emergent unplanned work and project closure. All activities will be covered by carryover funds. This will include additional safety modifications to assure confinement of hazardous materials in the likely event of a design basis earthquake.
	Continued to implement Late Wash (LW) modification in the Auxiliary Pump Pit (APP) and completed APP bypass lines.	Continue to implement LW modification in the APP.	Will commence LW startup to support hot operation.
	Completed design and construction activities on Entry Control Facility.	Begin efforts on control room upgrades, melter storage box, machine storage facility and interim waste storage facility.	Will continue efforts on control room upgrades, melter storage box, machine storage facility and interim waste storage facility.
	Procured and started installation of chemical process cell ammonia scrubbers, hydrogen mitigation components, and associated piping to mitigate safety concerns. ($0)	Complete installation of chemical process cell ammonia scrubbers, hydrogen mitigation components and associated piping to mitigate safety concerns. ($0)	Work complete. ($0)
	($63,510)	($45,558)	($1,540)
	$63,510	$45,558	$1,540
Subtotal, Defense Waste Processing Facility	$256,851	$234,648	$178,651

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: Hanford Waste Vitrification Plant (HWVP)

The Hanford Site has produced high-level waste for over 40 years. As part of the original Defense Waste Management Plan (1983), Hanford was to be the second site to construct a vitrification plant to solidify high-level waste. However, because of technical delays in the startup of the Defense Waste Processing Facility, from which Hanford was receiving design guidance, technical hurdles in the composition and processing of Hanford high-level waste, and an accelerated emphasis on low activity waste treatment, the start of construction will be delayed until FY 2002. The high activity waste vitrification facility is scheduled to begin operation in FY 2009. This delay is included in the Tri-Party Agreement between DOE, EPA and the State of Washington.

II. A. Summary Table: Hanford Waste Vitrification Plant (HWVP)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Hanford Waste Vitrification Plant	$ 54,300	$ 442	$ 0	$ -442
Total, Hanford Waste Vitrification Plant (HWVP)	$ 54,300	$ 442	$ 0	$ -442

II. B. Laboratory and Facility Funding Table: Hanford Waste Vitrification Plant (HWVP)

Richland Operations Office	$ 54,300	$ 442	$ 0	$ -442
Total, Hanford Waste Vitrification Plant (HWVP)	$ 54,300	$ 442	$ 0	$ 442

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Waste Vitrification Plant (HWVP)			
Hanford Waste Vitrification Plant			
Operating	Continued prior year regulatory activities; development of HWVP Waste Form Qualification (WFQ) Technology program; updated feed source terms and specifications; melter testing to support waste form qualification; and completed evaluation of the use of and updated estimate of melter life for vitrification of pretreated Neutralized Current Acid Waste (NCAW); technology exchanges with DWPF. Terminated detailed design, field engineering, and construction on the canister storage building. Supported HWVP project closeout consistent with TPA negotiations. Completed construction of Operations Administration Building. ($24,300)	Continued only program management activities. ($442)	Activities delayed pending reactivation of HWVP. ($0)
	$24,300	$442	$0
Construction	The Hanford Waste Vitrification Plant budget provides for construction to support the activities described above. ($30,000)	No activity. ($0)	No activity. ($0)
	$30,000	$0	$0
Subtotal, Hanford Waste Vitrification Plant	$54,300	$442	$0

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III. Hanford Waste Vitrification Plant (HWVP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hanford Waste Vitrification Plant (HWVP)	$54,300	$442	$0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: Waste Isolation Pilot Plant (WIPP)

The Waste Isolation Pilot Plant (WIPP) was authorized by Congress in 1979 (Public Law 96-164) as the nation's first research and development facility to demonstrate the safe shipment, emplacement, and geologic disposal of defense transuranic (TRU) wastes. WIPP is currently scheduled to reach a disposal decision in 1998.

The TRU waste was a by-product of the nation's nuclear weapons research, development, production, and decommissioning activities. Originally, TRU waste was buried as low-level waste in DOE constructed landfills. Since 1970, however, TRU waste has been placed in retrievable storage pending the completion and opening of a geologic disposal facility. The WIPP site is located in southeastern New Mexico near Carlsbad, 2,150 feet underground in ancient salt beds which provide a stable medium for disposal. In October 1992, the Congress passed the WIPP Land Withdrawal Act (Public Law 102-579) which permanently transferred public lands to the DOE. The Act also established about 140 separate requirements for DOE and other Federal Agencies. Key among the new requirements was a new regulatory framework in which the Environmental Protection Agency (EPA) must certify WIPP's compliance with the radioactive waste disposal standards (40 CFR 191) prior to establishing WIPP as a disposal site. In October 1993, the DOE initiated a revised test strategy where tests with radioactive waste would be conducted in laboratories rather than underground at WIPP. This enhanced laboratory program would collect required technical data more quickly and at lower cost. Additionally, DOE would accelerate the preparation of a draft compliance application document for submittal to the EPA in March 1995. Current major WIPP program activities include: (1) conducting an experimental program to obtain the necessary data to characterize the repository environment, including field studies, laboratory studies, engineering design, and modeling studies; (2) completing performance assessment analyses to predict the long-term behavior of the repository; (3) performing waste characterization activities to characterize WIPP waste at the generator sites; (4) preparing regulatory compliance certification packages for submittal to the EPA, the State of New Mexico, and other stakeholders to demonstrate compliance with the requirements of federal regulations (40 CFR 191, 264, and 268); and (5) maintaining the WIPP facility in compliance with DOE rules and regulations and with the necessary staffing to ensure the operational integrity of the facility. During FY 1996, one of the major activities will be the preparation of the final 40 CFR 191 regulatory compliance package for submission to EPA in December 1996. Also scheduled for completion is the draft Disposal Phase Supplemental Environmental Impact Statement. Additionally, the DOE will continue to respond to regulator requests for information in support of the No Migration Variance Petition (40 CFR 268.6) submitted to EPA during FY 1995, and in support of the RCRA Part B Permit (40 CFR 264) also submitted to the State of New Mexico during FY 1995.

The National TRU Program was established by the DOE to ensure that all TRU waste within the purview of the DOE is effectively managed from generation to final disposal. This is accomplished by developing strategic plans and program guidance for TRU waste generation, characterization, certification, packaging, transport, and disposal.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

II. A. Summary Table: Waste Isolation Pilot Plant (WIPP)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Waste Isolation Pilot Plant (WIPP)	$ 178,864	$ 174,323	$ 172,700	$ -1,623
Total, Waste Isolation Pilot Plant (WIPP)	$ 178,864	$ 174,323	$ 172,700	$ -1,623

II. B. Laboratory and Facility Funding Table: Waste Isolation Pilot Plant (WIPP)

Waste Isolation Pilot Plant	$ 178,864	$ 174,323	$ 172,700	$ -1,623
Total, Waste Isolation Pilot Plant (WIPP)	$ 178,864	$ 174,323	$ 172,700	$ -1,623

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Waste Isolation Pilot Plant (WIPP)			
Waste Isolation Pilot Plant (WIPP)			
Operating	Continued full compliance with environmental, safety, and health standards as well as safeguards and security requirements. Continued site operations and maintenance of the surface and underground facilities and equipment to ensure the operational integrity of the site. Continued support of public programs, quality assurance and program management. Continued to provide admininstrative services/infrastructure support. Continued experimental testing to provide data to satisfy information needs including studies on repository natural barriers, repository design and engineered barriers, waste interactions, and human intrusion. Completed Land Withdrawal Act (LWA) requirements for FY 1994 including the submittal to Congress of the Land Management Plan. Continued performance assessment analytical and modeling activities. Continued funding support to Environmental Protection Agency (EPA) for WIPP oversight activities as specified in the LWA. Initiated new test strategy by discontinuing all WIPP site activities relating to radioactive waste testing at WIPP. Continued preparations for initiating the Source Term Test Program at Los Alamos National Laboratory (LANL) including completion of the Environmental Assessment, and procurement, installation, and checkout of test equipment. Continued Systems Prioritization Method analyses. Continued information exchange meetings	Continue full compliance with environmental, safety, and health standards as well as safeguards and security requirements. Continue site operations and maintenance of the surface and underground facilities and equipment to ensure the operational integrity of the site. Continue support of public programs, quality assurance and program management. Continue to provide admininstrative services/infrastructure support. Complete all Land Withdrawal Act milestones including submitting the Biennial Environmental Compliance Report to EPA and the State of New Mexico. Initiate Source Term Test Program at LANL. Continue experimental testing and analyses to provide data to satisfy information needs including studies on repository natural barriers, repository design, engineered barrier, waste interactions, and human intrusion. Complete development of repository final calculational models for performance assessment. Complete the second iteration of the Systems Prioritization Method.	Will continue full compliance with environmental, safety, and health standards as well as safeguards and security requirements. Will continue site operations and maintenance of the surface and underground facilities and equipment to ensure the operational integrity of the site. Will continue support of public programs, quality assurance and program management. Will continue to provide administrative services/infrastructure support. Will complete LWA requirement for determination of need to acquire Federal oil and gas leases. Will continue Source Term Test Program at LANL. Will complete final iteration of the Systems Prioritization Method. Will continue experimental testing and analyses to provide data required to satisfy information needs for studies on repository natural barriers, repository design, engineered barriers, waste interactions, and human intrusion. Will provide final data input to models for performance assessment. Will complete final Performance Assessment calculations. Will publish the sealing systems design report.

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III. Waste Isolation Pilot Plant (WIPP) (Cont'd):
Waste Isolation Pilot Plant (WIPP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	with the National Academy of Sciences (NAS) WIPP Panel and the EPA.		
	Initiated accelerated compliance activities leading to a disposal decision in January 1998. Began preparation of a draft regulatory compliance package for submittal to EPA, New Mexico, and other stakeholders in March 1995. Initiated preliminary planning for preparation of the Supplemental Environmental Impact Statement for Disposal Operations. No funding was requested for State Impact Assistance. Provided funding for economic development activities.	Continue the accelerated compliance activities to support a January 1998 disposal decision. Complete preparation of the draft regulatory compliance certification application (40 CFR 191 Final Disposal Regulations) for submittal to the EPA and other stakeholders by March 1995. Submit No Migration Variance Petition (40 CFR 268) to EPA by May 1995. Submit revised Resource Conservation and Recovery Act (RCRA) Part B Permit application to the NMED by May 1995. Issue Notice of Intent and initiate preparation of the Supplemental Environmental Impact Statement (SEIS). No money was requested for State Impact Assistance. Provide funding for economic development activities. Will provide funding for selected EM TRU waste and other Waste Management activities.	Will continue to resolve comments and issues raised by the EPA and other reviewers on the certification applications submitted during FY 1995. Will initiate preparation of final compliance certification application for the Final Disposal Regulations (40 CFR 191) for submittal to the EPA, New Mexico, and other stakeholders by December 1996. Will continue to resolve questions and issues raised by regulator review of the No Migration Variance Petition (40 CFR 268). Will respond to State review questions and comments on the revised RCRA Part B Permit application. Will complete draft Supplemental EIS and distribute for public comment. No funding was requested for State Impact Assistance. Provide funding for economic development activities. Will provide funding for selected EM TRU waste and other Waste Management activities.
	Continued support for institutional review groups including the Environmental Evaluation Group (EEG), the New Mexico Environment Department (NMED), National Academy of Sciences (NAS), Western Governor's Association (WGA), Southertn States Energy Board (SSEB), and Indian Tribes. Continued to address stakeholder radiation safety issues. Provided contract services for research, development, and testing of new continuous air monitoring (CAM) technology in order to provide the best possible air monitoring system for WIPP.	Continue support for institutional review groups including EEG, NMED, NAS, WGA, SSEB, and Indian Tribes. Continue to address stakeholder radiation safety issues. Continue CAM activities.	Will continue support for institutional review groups including EEG, NMED, NAS, WGA, SSEB, and Indian Tribes. Will continue to address stakeholder radiation safety issues. Will continue CAM activities. Will complete all LWA milestones including the Biennial Environmental Compliance Report. Will initiate staffing ramp up of waste handlers, health physicists, and other critical personnel in preparation for the Operation Readiness Review (ORR) and achieve facility readiness in 1998.
	Selected Idaho National Engineering Laboratory/Argonne National	Initiate Enhanced Laboratory Program gas generator tests with actual TRU	Will continue Enhanced Laboratory Program gas generation tests with

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III. Waste Isolation Pilot Plant (WIPP) (Cont'd):
Waste Isolation Pilot Plant (WIPP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Laboratory-West (INEL/ANLW) to perform the Enhanced Laboratory Program to collect gas generation data from simulated and radioactive TRU mixed waste.	waste at the INEL. Continue activities and process improvements to ensure the adequacy of compliance data.	actual TRU waste at the INEL. Will continue activities associated with engineered alternatives and process improvements to ensure the adequacy of compliance data.
	Developed model of current contact-handled waste handling system and identified additional equipment and manpower required to meet the full contact-handled throughput capacity.	Preparations for full contact handled waste throughput are funded at minimum levels. Activities include complete design of secondary containment system and completion of contact-handled automated systems design.	Will initiate full capacity contact-handled systems studies and design on a limited basis.
	Evaluated existing remote-handled facilities and systems. ($171,730)	Identify tasks and projected costs required to reactivate the remote-handled waste handling systems at WIPP. ($166,388)	Will initiate remote-handled facility and equipment restoration on a limited basis. ($141,576)
	NATIONAL TRU PROGRAM OPERATIONS	NATIONAL TRU PROGRAM OPERATIONS	NATIONAL TRU PROGRAM OPERATIONS
	Continued waste characterization activities at the INEL, ANL-W, and Rocky Flats to provide baseline waste inventory data to performance assessment. Continued development of system-wide waste characterization and certification programs. Issued TRU System Baseline Inventory Report. Completed construction and checkout of Waste Characterization Area at ANL-W and initiated characterization of drums containing radioactive TRU waste. Submitted the Transportation Alternatives Study to Congress as prescribed by the LWA. Continued States training and education programs in support of agreements with Western Governors Association and New Mexico. Continued conducting WIPP transportation exercises to prepare state and local emergency responders for transportation incidents.	Continue waste characterization activities at the INEL, ANL-W, and Rocky Flats to provide baseline waste inventory data to performance assessment. Continue development of system-wide waste characterization and recertification programs. Continue States training and education programs in support of agreements with Western Governors Association and New Mexico. Continue conducting WIPP transportation exercises to prepare state and local emergency responders for transportation incidents. Maintain the existing certification of compliance on the Transuranic Waste Package Transporter (TRUPACT II) and associated modifications to the TRUPACT II Content (TRUCON) codes and the TRUPACT Safety Analysis Report for Packaging (SARP). Continue to develop and evaluate waste characterization techniques and	Will continue waste characterization activities at the INEL, ANL-W, and Rocky Flats to provide baseline waste inventory data to performance assessment. Will continue development of system-wide waste characterization and certification programs. Will complete remote-handled waste study required by the LWA. Will continue States training and education programs in support of agreements with Western Governors Association and New Mexico. Will continue WIPP transportation exercises to prepare state and local emergency responders for transportation incidents. Will maintain the existing certification of compliance on the TRUPACT II and associated modifications to the TRUCON codes and the TRUPACT SARP. Will continue to develop and evaluate waste characterization techniques and processes. Will

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III. Waste Isolation Pilot Plant (WIPP) (Cont'd):
Waste Isolation Pilot Plant (WIPP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating (Cont'd)	Submitted Emergency Response Training Report to Congress. Obtained Nuclear Regulatory Commission recertification of TRUPACT-II shipping cask. Continued to develop and evaluate waste characterization techniques and processes. Continued development of strategic plans, options, systems planning, and integration, and guidance for management of TRU waste inventories at generator sites. This activity was funded under WIPP in FY 1994. ($0)	processes. Continue waste characterization activities to provide sufficient data on stored TRU inventory for compliance package preparation. Continue development of strategic plans, options, systems planning, and integration, and guidance for management of TRU waste inventories at generator sites. Continue preparation of the Waste Technology Study and the Remote-Handled Waste Study required by the Land Withdrawal Act. Develop a report to predict optimum contact-handled packaging configuration, quantity, and mix based on generator site input. Coordinate program for gas generation testing of waste forms to be used to petition Nuclear Regulatory Commission (NRC) to increase TRUPACT-II wattage limits and expand the envelope for material that could be shipped in the TRUPACT-II. Identify issues and develop and evaluate issue resolution alternatives associated with remote-handled TRU waste. Provide funding for economic development activities and selected TRU waste and other Waste Management activities. This activity was funded under WIPP in FY 1995. ($0)	continue waste characterizacion activities to provide sufficient data on stored TRU inventory for compliance package preparation. Will continue development of strategic plans, options, systems planning, and integration, and guidance for management of TRU waste inventories at generator sites. Will complete Waste Technology Study and Remote-Handled Waste Study required by the LWA and submit to Congress. Will expand transportation and packaging capacity to be able to transport all certified waste forms. Will coordinate program for gas generation testing of waste forms to be used to petition NRC to increase TRUPACT-II wattage limits and expand the envelope for material that could be shipped in the TRUPACT-II. Will continue remote-handled alternative studies and design. Provide funding for economic development activities and selected TRU waste and other Waste Management activities. ($22,194)
	$171,730	$166,388	$163,770
Capital Equipment	WASTE ISOLATION PILOT PLANT - CAPITAL EQUIPMENT Provided funding for capital equipment to support experimental and operational activities consistent with the Disposal Decision Plan. ($4,217)	WASTE ISOLATION PILOT PLANT - CAPITAL EQUIPMENT Provide funding for capital equipment to support experimental and operational activities consistent with the Disposal Decision Plan. ($5,344)	WASTE ISOLATION PILOT PLANT - CAPITAL EQUIPMENT Will provide funding for capital euipment to support experimental and operational activities consistent with the Disposal Decision Plan. ($1,102)

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III. Waste Isolation Pilot Plant (WIPP) (Cont'd):
Waste Isolation Pilot Plant (WIPP) (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	NATIONAL TRU PROGRAM - CAPITAL EQUIPMENT Provided funding for capital equipment to support waste characterization, chemical analyses, and accelerated compliance activities. This activity was funded under WIPP in FY 1994. ($0)	NATIONAL TRU PROGRAM - CAPITAL EQUIPMENT Provide funding for capital equipment to support waste characterization, chemical analyses, and accelerated compliance activities. This activity was funded under WIPP in FY 1995. ($0)	NATIONAL TRU PROGRAM - CAPITAL EQUIPMENT Will provide funding for capital equipment to support waste characterization, chemical analyses, and accelerated compliance activities. ($439)
	$4,217	$5,344	$1,541
Construction	WASTE ISOLATION PILOT PLANT - CONSTRUCTION For General Plant Projects (GPP), provided funding for environmental, safety, health, and program-related projects in accordance with the Site Development Plan. ($2,917)	WASTE ISOLATION PILOT PLANT - CONSTRUCTION For GPP, provide funding for environmental, safety, health, and program-related projects in accordance with the Site Development Plan. For line item project, provide design funding for line item project 95-D-402, "Install Permanent Electrical Service to the WIPP". ($2,591)	WASTE ISOLATION PILOT PLANT - CONSTRUCTION For GPP, will provide funding for environmental, safety, and health, and program-related projects in accordance with the Site Development Plan. For line item project, will provide funding for 95-D-402, "Install Permanent Electrical Service to the WIPP". ($7,389)
	$2,917	$2,591	$7,389
Subtotal, Waste Isolation Pilot Plant (WIPP)	$178,864	$174,323	$172,700
Waste Isolation Pilot Plant (WIPP)	$178,864	$174,323	$172,700

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

WASTE MANAGEMENT (DEFENSE)

I. Preface: Program Direction

The Department is facing a variety of issues concerning the compliant management of its wastes. In order to assure that DOE is managerially and fiscally in control, federal employees are needed to assure the Government's interests are protected.

This activity provides for Federal full-time Equivalents at Headquarters and Operations Offices to manage the Defense and Non-Defense Corrective Activities and Waste Management Programs. The funding provides for salaries, personnel benefits, travel, as well as limited contractual services and supplies. In FY 1994, the Office of Environmental Management took steps in responding to the Government Performance and Results Act by substantially improving the technical capabilities, contractor and project management, and cost estimating capabilities with the addition of hundreds of new Federal Full-Time Equivalents (FTEs). Of that increase, the Waste Management Program will receive 382 FTEs across the complex in FY 1995. The new FTEs will augment the following job series: Environmental, Safety and Health line responsibilities; project management and engineers; site representatives; cost engineers and analysts; and program support. Substantial cost reductions are anticipated with the increase of Federal staffing at the Operations Offices and is the basis for most of the "Productivity Savings" included in the FY 1996 budget proposal.

II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Headquarters	$ 14,400	$ 15,000	$ 16,500	$ 1,500
Operations Offices	54,859	57,417	75,951	18,534
Capital Equipment	132	0	0	0
Total, Program Direction	$ 69,391	$ 72,417	$ 92,451	$ 20,034

II. B. Laboratory and Facility Funding Table: Program Direction

Albuquerque Operations Office	$ 6,419	$ 7,900	$ 12,984	$ 5,084
Chicago Operations Office	1,198	1,257	2,291	1,034
Washington Headquarters	14,400	15,000	16,500	1,500
Idaho Operations Office	13,525	13,993	13,151	-842
Nevada Operations Office	950	1,678	1,505	-173
Oakland Operations Office	3,800	3,998	4,840	842
Oak Ridge Operations Office	2,495	4,400	5,320	920
Richland Operations Office	14,571	15,191	24,605	9,414
Rocky Flats Plant	5,400	2,000	3,800	1,800
Savannah River Operations Office	6,633	7,000	7,455	455
Total, Program Direction	$ 69,391	$ 72,417	$ 92,451	$ 20,034

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
Headquarters	Funding by Object Class:		
	Personnel Compensation $10,131	$10,236	$11,741
	Benefits 2,381	2,670	2,758
	Travel 1,168	1,344	1,176
	Contractor Services 720	750	825
	$14,400	$15,000	$16,500
	Provided for 158 FTEs at Headquarters, to manage the Corrective Activities and Waste Management program operations. The funding provides for salaries, personnel benefits, travel, as well as contractual services and supplies. ($14,400)	Provides for 168 FTEs at Headquarters, to manage the Corrective Activities and Waste Management program operations. The funding provides for salaries, personnel benefits, travel, as well as contractual services and supplies. Increase of 10 FTEs have been provided to the Waste Management program through EM's FTE Pilot program. Funding for these FTEs will be identified through productivity savings during the fiscal year and transferred to the Program Direction account. ($15,000)	Will provide for 147 FTEs at Headquarters, to manage the Corrective Activities and Waste Management program operations. This decrease of 38 FTEs over FY 1995 reflects reductions due to Departmental streamlining. The funding will provide for salaries, personnel benefits, travel, as well as contractual services and supplies. ($16,500)
	158.0 FTE $14,400	168.0 FTE $15,000	147.0 FTE $16,500
Operations Offices	Funding by Object Class:		
	Personnel Compensation $38,919	$42,241	$52,481
	Benefits 9,146	9,946	12,353
	Travel 4,176	6,128	7,320
	Contractor Services 2,750	3,069	3,797
	$54,991	$61,384	$75,951
	Provided for 521 FTEs at the Operations Offices and is a continuation of the FY 1993 programs. In FY 1994, 82 FTEs at Idaho and 242 FTEs at Richland were transferred to the Office of Facility Transition and Management for site support activities under that office's purview. The demands on the staff continued to grow because of Tiger Team assessments, line program management	Provides for 893 FTEs at the Operations Offices and is a continuation of the FY 1994 programs. The responsibilities of the staff include line program management responsibilities in accordance with various DOE Orders, including conducting environmental, health, safety, and quality assurance programs, ensuring compliance with regulatory requirements, conducting	Will provide for 915 FTEs at the Operations Offices and is a continuation of the FY 1995 programs. The additional 22 FTEs have been provided to the Waste Management program through EM's Pilot program. Funding for these FTEs will be identified through productivity savings during the fiscal year and transferred to the Program Direction account.

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III. Program Direction (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operations Offices (Cont'd)	responsibilities in accordance with SEN 60 and various DOE Orders, including conducting environmental, health, safety, and quality assurance programs, ensuring compliance with regulatory requirements, conducting self-assessment function, and responding to numerous requests for information/analyses associated with a multi-billion dollar waste treatment, storage and disposal construction and operating program. ($54,859)	self-assessment function, and responding to numerous requests for information/analyses associated with a multi-billion dollar waste treatment, storage and disposal construction and operating program. An additional 372 FTEs have been provided to the Waste Management program through EM's FTE Pilot program. Also, the new Ohio Office will receive 52 FTEs, 28 of which are to support the West Valley Demonstration Project. Funding for all 372 FTEs will be identified through productivity savings during the fiscal year and transferred to the Program Direction account. ($57,417)	Also, Albuquerque Program Direction funds include $6.3M to support FTEs at WIPP. ($75,951)
	521.0 FTE $54,859	893.0 FTE $57,417	888.0 FTE $75,951
Capital Equipment	The Program Direction budget provides for capital equipment purchases to support the activities described above. ($132)	No activity. ($0)	No activity. ($0)
	$132	$0	$0
Program Direction	679.0 FTE $69,391	1061.0 FTE $72,417	1035.0 FTE $92,451

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes made from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars)

IV. A. Project Summary Listing

Waste Management - Defense a/

1. Construction Funded:

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
GPD-171	General Plant Projects, VL	$ 152,819	$ 18,925	$ 15,797	$ 30,728	$ N/A	$ N/A
96-D-400	Replace Industrial Waste Piping, KCP, AL	0	0	0	200	2,700	2,900
96-D-401	CTMP Immobilization of Miscellaneous Wastes, RF	0	0	0	1,400	9,000	10,400
96-D-402	CTMP Building 374/774 Sludge Immobilization, RF	0	0	0	1,500	16,700	18,200
96-D-403	Tank Farm Service Upgrades, SR	0	0	0	3,315	17,755	21,070
96-D-405	T-Plant Secondary Containment, RL	0	0	0	2,100	16,500	18,600
96-D-406	K Basins Operations Program, RL	0	0	0	26,000	7,200	33,200
95-D-401	Radiological Support Facilities, RL	0	0	1,585	0	27,915	29,500
95-D-402	Install Permanent Electrical Service for the WIPP, AL	0	0	700	4,314	928	5,942
95-D-405	Industrial Landfill V, OR	0	0	1,000	4,600	4,000	9,600
95-D-406	Road 5-01 Reconstruction, Area 5,NV	0	0	2,338	1,023	1,500	4,861
95-D-407	219-S Secondary Containment Upgrade, RL	0	0	2,000	0	600	2,600
95-D-408	Phase II Liquid Effluent Treatment and Disposal, RL	0	0	7,100	0	19,500	26,600
94-D-400	High Explosive Wastewater Treatment System, LANL	0	1,000	900	4,445	100	6,445
94-D-402	Liquid Waste Treatment System, NTS	0	2,114	3,292	282	0	5,688
94-D-404	Melton Valley Storage Tank Capacity Increase, ORNL	0	9,282	21,373	11,000	6,345	48,000
94-D-405	Central Neutralization Facility Pipeline Extension Project, K-25	0	1,100	0	0	614	1,714
94-D-406	Low-Level Waste Disposal Facilities, K-25	0	6,000	2,400	0	119,600	128,000
94-D-407	Initial Tank Retrieval Systems, RL	0	7,000	8,680	9,400	290,020	315,100
94-D-408	Office Facilities - 200 East, RL	0	1,200	0	0	12,400	13,600

a/ There are many qualifying footnotes on several of these projects. The reader should refer to the individual project for such footnotes.

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IV. A. Project Summary Listing (continued)

Waste Management - Defense a/

1. Construction Funded: (continued)

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
94-D-411	Solid Waste Operation Complex, RL	$ 0	$ 12,300	$ 35,179	$ 5,500	$ 133,721	$ 186,700
94-D-416	Solvent Storage Tanks Installation, SR	0	1,500	1,700	0	40	3,240
94-D-417	Intermediate Level and Low Activity Waste Vault, SR	0	0	300	2,704	41,796	44,800
93-D-174	Plant Drains Wastewater Treatment Upgrades, Y-12	1,800	3,500	1,400	0	0	6,700
93-D-175	Industrial Waste Compaction Facility, Y-12	2,200	1,800	0	0	5,300	9,300
93-D-176	Oak Ridge Reservation Storage Facility, K-25	4,000	1,000	0	0	44,000	49,000
93-D-177	K-1515 F Lagoon, K-25	1,500	4,100	0	0	3,000	8,600
93-D-178	Building 374 Liquid Waste Treatment Facility, RF	2,700	1,000	3,300	3,900	21,800	32,700
93-D-181	Radioactive Liquid Waste Line Replacement, RL	350	2,766	3,300	0	10,600	17,016
93-D-182	Replacement of Cross Site Transfer System, RL	595	6,500	14,810	19,795	5,500	47,200
93-D-183	Multi-function Waste Remediation Facility, RL	10,300	41,410	80,328	31,000	1,052,262	1,215,300
93-D-187	High Level Waste Removal from Filled Waste Tanks, SR	194,420	3,000	24,825	19,700	323,105	565,050
92-D-171	Mixed Waste Receiving and Storage Facility, LANL	2,895	0	0	1,105	5,640	9,640
92-D-172	Hazardous Waste Treatment and Processing Facility, Pantex Plant	4,300	300	0	0	10,300	14,900
92-D-177	Tank 101-AZ Waste Retrieval System, RL	8,800	2,000	5,000	0	0	15,800

a/ There are many qualifying footnotes on several of these projects. The reader should refer to the individual project for such footnotes.

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IV. A. Project Summary Listing (continued)

Waste Management - Defense a/

1. Construction Funded: (continued)

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
92-D-188	Waste Management ES&H and Compliance Activities, VL	$ 15,732	$ 9,425	$ 2,846	$ 1,100	$ 0	$ 34,200
91-D-171	Waste Receiving and Processing Facility, Module I, RL	31,900	17,700	3,995	0	0	53,595
90-D-172	Aging Waste Transfer Lines, RL	1,181	5,000	3,819	2,000	500	12,500
90-D-177	RWMC Transuranic Waste Characterization and Storage Facility, ID	84,125	21,700	1,747	1,428	18,500	127,500
90-D-178	TSA Retrieval Enclosure, ID	41,000	0	7,594	2,606	0	51,200
89-D-172	Hanford Environmental Compliance, RL	191,873	11,056	0	0	26,771	229,700
89-D-173	Tank Farm Ventilation Upgrade, RL	22,500	1,000	300	800	0	24,600
89-D-174	Replacement High-Level Waste Evaporator, SR	68,404	12,974	13,000	11,500	12,322	118,200
88-D-173	Hanford Waste Vitrification Plant, RL	256,335	30,000	0	0	923,665	1,210,000
87-D-181	Diversion Box and Pump Pit Containment Buildings, SR	21,963	2,137	0	0	0	24,100
86-D-103	Decontamination and Waste Treatment Facility, SAN	10,792	10,260	4,995	8,885	33,073	68,005
83-D-148	Non-Radioactive Hazardous Waste Management, SR	87,237	2,169	6,000	1,000	0	96,406
82-D-136	LET&D Processing Facility Upgrade, INEL, ID	56,000	0	1,000	0	0	57,000
81-T-105	Defense Waste Processing Facility, SR	1,167,901	63,510	45,058	0	0	1,276,469
	Subtotal, Construction Funded	$2,507,973	$ 314,728	$327,661	$ 213,330	$4,559,393	N/A

a/ There are many qualifying footnotes on several of these projects. The reader should refer to the individual project for such footnotes.

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IV. A. Project Summary Listing (continued)

Waste Management - Defense a/

Project No.	Project Title	Previous Obligations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unappropriated Balance	TEC
2. Operating Expense Funded:							
	Defense Waste Processing Facility, Saltstone Vault #2, SR	1,000	161	0	7,568	8,761	17,490
	Mixed Waste Management Facility, LLNL, SF	6,500	10,000	7,656	15,312	22,452	61,920
	Tank 241-C-106 Sluicing, RL	2,500	12,400	16,000	7,694	3,600	42,200
	Cap and Roof for Saltstone Vault #1, SR	0	0	0	1,636	1,000	2,636
	Spent Nuclear Fuel, SR	0	0	5,000	2,400	54,100	61,500
	Subtotal, Operating Expense Funded	10,000	22,561	28,656	34,610	89,919	
TOTAL, Waste Management - Defense		$2,517,973	$ 337,289	$356,317	$ 247,940	$4,649,312	N/A
TOTAL NUMBER OF LINE ITEMS		(30)	(33)	(33)	(29)	(43)	

a/ There are many qualifying footnotes on several of these projects. The reader should refer to the individual project for such footnotes.

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DEPARTMENT OF ENERGY
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(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: General Plant Projects, Waste Management, Defense Various Locations	2a. Project No.: GPD-171 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

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IV. B. Construction Funded Project Descriptive Summary

1. Title and Location: Project GPD-171, General Plant Projects, Waste Management - Defense, Various Locations

TEC: N/A
TPC: N/A

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1991	$ 20,583		$ 20,583	$ 4,117
1992	56,199		56,199	18,444
1993	76,037		76,037	42,081
1994	28,959 a/	- 23,443 b/	5,516	50,445
1995	16,832 c/d/	- 5,641 e/	15,797	39,281
1996	30,728		30,728	23,495
1997	0		0	18,002
1998	0		0	6,705
1999	0		0	2,290

a/ Reduction of $835,000 for the FY 1994 Budget Amendment.
b/ Use of prior year funds ($13,409,000) and current year ($10,034,000) for FY 1994 General Reduction.
c/ Use of $600,000 for Budget Amendment.
d/ FY 1995 Congressional reduction.
e/ Use of current year ($1,035,000) and prior year ($4,606,000) funds for Productivity Savings.

3. Narrative:

These projects provide various items of new construction, additions, alterations, and improvements to the lands, buildings, and utility systems at the Albuquerque, Idaho, Nevada, Oak Ridge, Richland, Rocky Flats, and Savannah River offices to support the waste management program needs in health, safety, environment, general support, and other program requirements. Some of the projects may be located on non-Government land.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Replace Industrial Waste Piping, Kansas City Plant, Kansas City, Missouri	2a. Project No.: 96-D-400 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-400, Replace Industrial Waste Piping, Kansas City Plant, Kansas City, Missouri

TEC: $ 2,900
TPC: $ 3,650

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 200		$ 200	$ 150
1997	2,700		2,700	1,400
1998	0		0	1,350

3. Narrative:

The Kansas City Plant (KCP) has an Industrial Waste Pretreatment Facility (IWPF) which was put into operation in 1988. The IWPF treats waste waters from the plant's manufacturing processes before they are released to the Kansas City, Missouri, municipal waste treatment system. Wastes are carried from the main manufacturing building and five other buildings to the remotely located IWPF via an overhead piping system. This overhead piping system carries waste waters which contain acid, caustic, chrome, cyanide, and other dilute industrial wastes.

This project will replace the overhead industrial waste piping system at the Kansas City Plant (KCP) including dilute acid, caustic acid, caustic, cyanide, chrome, and industrial waste lines from the main manufacturing building and five other small buildings to the IWPF. The project includes phased demolition and construction to replace the nine separate overhead industrial waste system pipe lines which together convey virtually all process waste from the operating buildings to the IWPF. All of the pipe lines are located on an outdoor overhead pipe bridge. The new piping will be installed in the same location as the existing piping. Minor modification will be made to the existing bridge to strengthen the pipe anchor points to accommodate thermally induced loads. The total length of piping is approximately 6,700 feet.

The FY 1996 funding will be used to perform Title I and Title II engineering and project management activities.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	CTMP Immobilization of Miscellaneous Wastes, Rocky Flats Envr. Tech. Site, Golden, Colorado	2a. Project No.: 96-D-401 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-401, CTMP Immobilization of Miscellaneous Wastes, Rocky Flats Envr. Tech. Site, Golden, Colorado

TEC: $10,400 a/
TPC: $15,100

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 1,400		$ 1,400	$ 600
1997	2,000		2,000	1,900
1998	6,200		6,200	5,400
1999	800		800	2,500

a/ The $10,400,000 represents estimated capital funding as refelcted in the 100% Conceptual Design Report.

3. Narrative:

This project is one of six proposed treatment systems identified in the Comprehensive Treatment and Management Plan (CTMP), a requirement of the Land Disposal Restriction (LDR) Federal Facility Compliance Agreement (FFCA II). The CTMP describes DOE's strategy and commitments for bringing Rocky Flats' LDR mixed wastes into compliance with applicable regulations. The project will provide systems to store, handle, pretreat, and stabilize (through polymer encapsulation and cementation) a large number of low-level, mixed waste streams generated in production and laboratory buildings across the site to meet Land Disposal Restriction (LDR) requirements and other disposal site waste acceptance criteria (WAC). Waste forms planned for treatment include: acids, analytical lab solutions, beryllium fines, cemented filters, combustibles, excess chemicals, filters and media, glass, glovebox parts with lead, ground glass, heavy metals (including lead), incinerator ash, leaded gloves, acid-contaminated leaded gloves, miscellaneous plutonium recovery by-products, organic resins, particulate sludge, roaster oxide, sand from button breakout, solidified process solids, turnings, etc. The systems will most likely be located in Room 158 of Building 776 and will require approximately 4,400 square feet of floor space. Minor modifications to the existing room and necessary ancillary systems to support the storage, handling, and treatment activities are also included in the project scope.

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FY 1996 CONGRESSIONAL BUDGET REQUEST

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: CTMP Building 374/774 Sludge Immobilization, Rocky Flats Envr. Tech. Site, Golden, Colorado	2a. Project No.: 96-D-402 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-402, CTMP Building 374/774 Sludge Immobilization, Rocky Flats Envr. Tech. Site, Golden, Colorado TEC: $18,200 a/ TPC: $22,900

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 1,500		$ 1,500	$ 1,100
1997	7,000		7,000	6,600
1998	7,200		7,200	7,500
1999	2,500		2,500	3,000

a/ The $18,200,000 represents capital funding reflected in the 100% Conceptual Design Report.

3. Narrative:

This project is one of six proposed treatment systems identified in the Comprehensive Treatment and Management Plan (CTMP), a requirement of the Land Disposal Restriction (LDR) Federal Facility Compliance Agreement (FFCA II). The CTMP describes DOE's strategy and commitments for bringing Rocky Flats' LDR mixed wastes into compliance with applicable regulations. The project will provide systems to treat low-level mixed bypass sludge generated from liquid waste treatment operations in Building 374 and 774, replacing the existing precipitation waste sludge cementation process which does not produce waste forms which meet LDR requirements and other disposal site waste acceptance criteria (WAC). The new system will utilize one of the following three technologies; Microwave Vitrification, Polymer Encapsulation, or Improved Cementation Processes. Studies of these technologies are on-going to determine the suitability of these processes (i.e., effectiveness and cost) and a final decision will be made before preliminary design is initiated. Additionally, Break-Open and Size-Reduction systems have also been included in the scope of this project to allow for the handling and processing of existing inventories of semi-solidified bypass sludge. The following waste forms are being planned for treatment: ground glass, incinerator ash, sand from button breakout, solar pond sludge, solidified bypass sludge, solidified process solids, and wet slurry/bypass sludge.

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Tank Farm Service Upgrades, Savannah River, South Carolina	2a. Project No.: 96-D-403 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-403, Tank Farm Service Upgrades, Savannah River, South Carolina

TEC: $21,070
TPC: $24,200

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 3,315		$ 3,315	$ 3,315
1997	10,326		10,326	8,752
1998	6,956		6,956	7,351
1999	473		473	1,652

3. Narrative:

The Tank Farm Services Upgrades project consists of improvements to three different areas of the Tank Farm. These improvements will include service piping upgrades in the H-Area Tank Farm (West Hill), Electrical upgrades in the F-Area Tank Farm, and a cooling system upgrade in the H-Area Tank Farm (East Hill).

The mechanical services in the H-Area Tank Farm need to be replaced due to damage to the services caused by age. These upgrades are required to support tank farm operations. This project will replace buried service piping in trenches or on pipe racks and provide three new gang valve assemblies with double contained steam supply.

The electrical upgrades in F-Area will consist of the addition or replacement of automatic transfer switches (ATS) and cable which will correct the electrical low voltage situation in the F-Area Tank Farm.

The cooling system upgrade will provide adequate cooling to support In-Tank Precipitation (ITP) and Extended Sludge Processing (ESP) which will feed Saltstone and Defense Waste Processing Facility (DWPF).

FY 1996 funds will be used for Title I, Title II design, and procurement of engineered materials.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	T-Plant Secondary Containment and Leak Detection Upgrades, Richland, Washington	2a. Project No.: 96-D-405 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-405, T Plant Secondary Containment and Leak Detection Upgrades, Richland, Washington TEC: $18,600 TPC: $22,560

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 2,100		$ 2,100	$ 1,830
1997	3,500		3,500	3,330
1998	6,100		6,100	6,180
1999	5,600		5,600	5,590
2000	1,300		1,300	1,670

3. Narrative:

T Plant has been recommended for use as the primary interim decontamination facility for the Hanford Site. The decontamination activities support Hanford Site Environmental Restoration Mission and Waste Management Programs. This project will modify T-Plant facilities to comply with State of Washington and federal environmental regulations for secondary containment and leak detection.

2226

1. Title and Location of Project: K-Basin Operations Program a/ Richland, Washington	2a. Project No.: 96-D-406 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location — Project 96-D-406 K-Basin Operations Program #/ Richland, Washington — TEC: $33,200 TPC: TBD

Start Date: 1st Qtr. FY 1996 — Completion Date: 1st Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 26,000		$ 26,000	$26,000
1997	7,200		7,200	7,200
1998	TBD		TBD	TBD
1999	TBD		TBD	TBD
2000	TBD		TBD	TBD

#/ FY 1996 appropriations will be used for design.

3. Narrative:

The K Area facilities were constructed in the 1953 through 1955 time period to support the production of nuclear weapons material. Columbia River water was pumped to sedimentation basins where it was treated for ultimate use as sanitary/drinking water, fire protection water or once-through reactor cooling. Spent fuel from the reactors was discharged into cooled storage basins until it was reprocessed. Following the shutdown of the 105KW reactor in February 1970 and the 105KE reactor in February 1971 the stored fuel was removed and the storage basins were idle but kept full of water. In June 1975 the 105KE basin was brought back into service to provide storage and handling of irradiated N Reactor fuel. The 105KW basin was returned to service in February 1981 for the same purpose. Since weapons material production has been halted, the basins now function as a storage facility for the spent fuel until it is removed for stabilization and stored elsewhere. Changes in the facilities' mission, and consequently budget priorities, over the years have prevented periodic upgrades of plant systems to comply with changing regulatory requirements and counter the effects of normal system aging. In addition undocumented changes to many systems have been made, which make the systems' exact operational status indeterminate and potentially hazardous to personnel.

The existing water treatment system will be replaced with a package unit, which complies with regulatory requirements and is sized to support personnel, plant and fire protection water needs until the basins are emptied. The electrical system will be modified to meet current standards for personnel protection, reliability and the fuel storage mission. Systems necessary for fire detection/alarm and meeting Life Safety Code requirements will also be modified. A maintenance ship will be constructed to provide safe, cost effective maintenance to the operation of the K-Basin facility until the removal of spent nuclear fuel is accomplished.

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Install Permanent Electrical Service for the WIPP, Waste Isolation Pilot Plant, Carlsbad, New Mexico	2a. Project No.: 95-D-402 2b. Construction Funded

SIGNIFICANT CHANGES

o The scope of the project changed due to a project upgrade from the Southwest Public Services (SPS) utility. This new upgrade will provide a technically superior 115 kilovolt (kV) electrical transmission line (south line) and substation as opposed to the previous project (north line) which would provide a 69 kv electrical system. Because of this scope change, the TEC has increased by $176,000,000.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-402, Install Permanent Electrical Service for the WIPP, Waste Isolation Pilot Plant, Carlsbad, New Mexico — TEC: $ 5,942a/ TPC: $ 6,209

Start Date: 2nd Qtr. FY 1995 — Completion Date: 2nd Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 700		$ 700	$ 578
1996	4,314		4,314	3,398
1997	752		752	1,575
1998	176		176	391

a/ Cost estimate based on revised baseline estimate from Soutwest Public Services (SPS).

3. Narrative:

The scope of the project changed due to a project upgrade from the Southwest Public Services (SPS) utility. This new upgrade will provide a technically superior 115 kilovolt (kV) electrical transmission line (south line) and substation as opposed to the previous project (north line) which would provide a 69 kV electrical system. Because of this scope change, the TEC has increased by $176,000.

Project Elements: In addition to the continuance of operating the existing transmission line, this project includes the following main elements.

a. Approximately 19.0 miles of new wood-pole H-frame transmission line routed from Southwest Public Services (SPS) ~~PCA Interchange Substation~~ to OCHOA Sand Dunes substations to complete the transmission line loop to WIPP ~~the WIPP site~~. As is the case with the existing line, the new line will be owned and operated by SPS.
b. A new 115 ~~69~~/13.8 kV substation whose main elements include two Load Tap Change (LTC) power transformers, each supplied with grounding resistors; 115 ~~69~~ kV sulfur hexafluoride power circuit breakers; ~~power factor correction capacitor bank;~~ disconnect switches and buswork including 115 kV level insulators and steel support structures; protective relaying, instrumentation, control and auxiliary power equipment; 13.8 kV vacuum circuit breaker switchgear; a control building; and a perimeter security fence.
c. The addition of a 115 ~~69~~ kV breaker terminal position and modification of protective relaying at SPS's ~~P.C.A.~~ Whitten Interchange.
d. Dual 13.8 kV cable circuits installed in underground utility corridor between the new SPS WIPP Substation and the existing 13.8 kV Plant Substation switchgear. Additionally, grounding, instrumentation, control and alarm cables between both substations will be installed. All such cabling will be owned by the Department of Energy and operated and maintained by the Management and Operations contractor.
e. Demolition of the existing 69/13.8 kV construction phase utility substation. Demolition will be under SPS responsibility.
f. Either access to the 13.8 kV vacuum circuit breakers equipment by authorized WIPP personnel or access to load interrupter switches and control of 13.8 kV vacuum circuit breakers.
g. Installation of equipment to remotely monitor SPS's utility meter. ~~and provide security monitoring capability.~~

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	Industrial Landfill V and Construction/Demolition Landfill VII, Phase II, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee	2a. Project No.: 95-D-405 2b. Construction Funded

SIGNIFICANT CHANGES

- Date Physical construction starts changed from 2nd Qtr. FY 1996 to 3rd Qtr. FY 1996 because permitting period was incorporated into the project schedule. A permit modification to the existing permit will now be required based on technical changes in landfill design required from promulgation of RCRA Subtitle D requirements into the Tennessee Department of Environmental and Conservation solid waste rules.

- TPC increased from $9,850,000 to $10,606,000 to include expense funded facility engineering activities are part of Other Project Costs.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-405, Industrial Landfill V and Construction/Demolition Landfill VII, Phase II, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee

TEC: $ 9,600
TPC: $10,606a/

Start Date: 1st Qtr. FY 1995 Completion Date: 2nd Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 1,000		$ 1,000	$ 800
1996	4,600		4,600	4,700
1997	200		200	100
1998	3,800		3,800	2,900
1999	0		0	1,100

a/ TPC increased from $9,850,000 to $10,606,000 to include expense funded facility engineering activities as part of Other Project Costs.

3. Narrative:

This project will provide the engineering design, permitting, and construction for the development of Phases II and III of industrial landfill V (ILF-V) and site enhancements to the construction/demolition landfill VII (C/DL-VII). Both of these landfills are located within the boundaries of the Department of Energy's (DOE's) Oak Ridge Reservation located in Oak Ridge, Tennessee. The initial phases of the landfills and all landfill support facilities were previously constructed as part of the Steam Plant Ash Disposal (SPAD) project (90-D-125).

The phased development of ILF-V and the enhancements to the C/DL-VII are required to meet the future disposal requirements of DOE Oak Ridge Operations and to comply with the Resource Conservation and Recovery Act (RCRA), Subtitle D requirements that have been promulgated into the Tennessee Department of Environment and Conservation (TDEC) solid waste rules. The waste to be disposed at these sites is nonhazardous, industrial waste or construction/demolition debris.

The FY ~~1995~~ 1996 funding ~~obligations~~ will fund ~~design and~~ Title III engineering, construction support, ~~services~~ project management, construction management, and construction.

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DEPARTMENT OF ENERGY
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(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Road 5-01 Reconstruciton, Area 5 Nevada Test Site, Nevada	2a. Project No.: 95-D-406 2b. Construction Funded

SIGNIFICANT CHANGES

- TEC increased from $4,674,000 to $4,861,000 because of a scope revision.
- TPC increased from $4,734,000 to $5,084,000 because of a scope revision and additional CDR cost.
- Revised CDR delayed construction start until 1st Quarter FY 1996.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-406, Road 5-01 Reconstruction, Area 5 Nevada Test Site, Nevada

TEC: $ 4,861 a/
TPC: $ 5,084 a/

Start Date: 1st Qtr. FY 1995 Completion Date: 4th Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 2,338		$ 2,338	$ 2,338
1996	1,023		1,023	1,023
1997	1,500		1,500	1,500

a/ This financial schedule shows a requested TEC and TPC increase to provide funding for scope revision and additional CDR cost. The revised CDR delayed construction start until 1st Quarter FY 1996.

3. Narrative:

This project will provide for the reconstruction of Road 5-01 into a 9.5 mile, all-weather, paved access road for both heavy- and light-vehicle traffic to the Area 5 RWMS. The roadway will be designed for H-20 highway wheel-loading and employ drainage controls for a 100-year flood.

The FY ~~1995~~ 1996 funds will be used for ~~project design and~~ construction ~~startup~~.

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DEPARTMENT OF ENERGY
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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: High Explosive Wastewater Treatment, Los Alamos National Laboratory, Los Alamos, New Mexico	2a. Project No.: 94-D-400 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-400, High Explosive Wastewater Treatment, Los Alamos National Laboratory, Los Alamos, New Mexico

TEC: $ 6,445
TPC: $ 7,039

Start Date: 2nd Qtr. FY 1994 Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 1,000		$ 1,000	$ 351
1995	1,000	- 100 a/	900	900
1996	4,445		4,445	4,548
1997	100		100	646

a/ Reduction of $100,000 of current year funds for Productivity Savings.

3. Narrative:

This project provides for design and construction of a collection and treatment system for High Explosive (HE) wastewaters. The present method of HE wastewater treatment, using settling in sumps, provides no removal of dissolved contaminants. The exiting system has violated the current permit and cannot meet new effluent limitations which are in the Laboratory's current NPDES permit.

The project will consist of facilities to collect and treat HE flows. The system will require the installation of double wall collection pipe, manholes, and a central waste processing station with two satellite subsystems.

The FY ~~1995~~ 1996 funding will be used for design, project management, and construction.

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DEPARTMENT OF ENERGY
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(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Liquid Waste Treatment System, Nevada Test Site, Nevada	2a. Project No.: 94-D-402 2b. Construction Funded

SIGNIFICANT CHANGES

- TEC increased from $5,406,000 to $5,688,000 due to a scope change.
- TPC increased from $5,446,000 to $6,123,000 due to a scope change.
- Scope change delayed construction completion from 3rd Quarter FY 1995 to 1st Quarter FY 1996.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-402, Liquid Waste Treatment System, Nevada Test Site, Nevada — TEC: $5,688 a/ TPC: $6,123 a/

Start Date: 1st Qtr. FY 1994 Complete Date: 1st Qtr. FY 1996

2. Financial schedule (Federal Funds): a/

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 2,114		$ 2,114	$ 405
1995	3,292		3,292	4,900
1996	282		282	383

a/ This financial schedule shows a requested TEC and TPC increase to provide funding for the revised storage holding facilities at the new location.

3. Narrative:

~~This project will provide for an evaporation lagoon system at each of three locations for handling and disposal of contaminated water from the Groundwater Characterization Project (GCP). The project is required to provide a means of processing and disposing contaminated effluents which may be encountered in the GCP.~~

The FY ~~1995~~ 1996 funding will be used ~~for~~ to complete construction ~~of the final lagoon systems~~.

This project provides a central facility, located adjacent to Yucca Lake and the Decontamination Facility in Area 6 of the Nevada Test Site (NTS), for treating of contaminated effluents from the Environmental Restoration (ER) and Defense Programs (DP). Due to its nature the treatment system site is classified as a nonreactor nuclear facility and will comply to the appropriate sections of DOE Order 6430.1A, General Design Criteria Manual. The project is required to provide a means of processing and disposing contaminated effluents which may be encountered in the Groundwater Characterization Project (GCP).

The Liquid Waste Treatment System (LWTS) facility is comprised of double-lined receiving/holding tanks, evaporation reservoirs, process equipment for chemical separation of solids, and a batch plant to provide sludge/sediment stabilization through cementation. Associated facility infrastructure for site work, fending, lighting, piping, pumps, and migratory bird protection is also included. Total LWTS capacity is approximately six million gallons of contaminated liquid per year. Receiving/holding and evaporation reservoirs, and associated mixed waste processes will be permitted per Resource Conservation and Recovery Act (RCRA) regulation.

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Melton Valley Storage Tanks Capacity Increase, Oak Ridge National Laboratory, Oak Ridge, Tennessee	2a. Project No.: 94-D-404 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-404, Melton Valley Storage Tanks Capacity Increase, Oak Ridge National Laboratory, Oak Ridge, Tennessee

TEC: $48,000
TPC: $52,400

Start Date: 1st Qtr. FY 1994 Completion Date: 4th Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 9,400	- 118 a/	$ 8,063	$ 2,383
1995	21,373	- 1,219 b/	21,373	14,981
1996	11,000		11,000	16,700
1997	7,564		7,564	5,000
1998	0		0	8,936

a/ Congressionally mandated rescission.
b/ Reduction of prior year funds in the amount of $1,219,000 for Productivity Savings.

3. Narrative:

This project will provide an additional 450,000 gallons of functional storage capacity to existing Melton Valley Storage Tanks (MVST) Facility plus a reserve capacity of 90,000 gallons, which is equal to the useable capacity of the largest tank to be installed. The new facility will be located in Melton Valley and will have the capability to transfer and receive liquids and readily pumpable sludges to and from the exiting MVST facility. Facilities to be provided area: 1) lined tank vaults containing six 100,000 gallon LLLW storage tanks, 2) lined pump and valve vaults, 3) HEPA filtered ventilation system, 4) lined interconnection concrete valve pit, 5) diked, concrete truck unloading pad, 6) control equipment room and 7) utilities including water, electrical, air, communication, and fire protection.

The ~~FY 1995 and~~ FY 1996, FY 1997 and FY 1998 Appropriation requests have been adjusted due to changing priorities and budget constraints.

The funding for FY ~~1995~~ 1996 will be used to complete ~~design, for advance~~ procurement ~~of long-lead time materials and equipment~~ and to ~~initiate~~ continue construction.

2240

1. Title and Location of Project: Initial Tank Retrieval Systems, Richland, Washington	2a. Project No.: 94-D-407 2b. Construction Funded

SIGNIFICANT CHANGES

- Issuance of conceptual design reports has re-baselined this project.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-407, Initial Tank Retrieval Systems, Richland, Washington — TEC: $315,100 a/ TPC: $375,200 a/

Start Date: 2nd Qtr. FY 1994 — Completion Date: 2nd Qtr. FY 2010 b/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 7,000		$ 7,000	$ 509
1995	17,700	-15,020 c/	2,680	8,171
1996	9,400		9,400	9,400
1997	24,000		24,000	20,514
1998	21,500		21,500	20,179
1999	22,600		22,600	17,681
2000	24,700		24,700	20,640
2001	19,800		19,800	23,906
2002	19,800		19,800	20,870
2003	21,800		21,800	22,923
2004	21,800		21,800	23,290
2005	31,800		31,800	33,710
2006	22,800		22,800	24,339
2007	22,800		22,800	25,348
2008	24,943		24,943	19,437
2009	17,677		17,677	22,981
2010	0		0	1,202

a/ Current total estimated costs, total project cost, and financial schedule are based on the completed conceptual design report and detailed cost estimate.

b/ Design and construction durations are based on the completed conceptual design report. Durations were extended because of a shift in the retrieval sequence to match current program needs.

c/ Reduction of $9,020,000 of current year funds for Productivity Savings. Use of $6,000,000 of prior year funds for uncosted offset.

3. Narrative:

The Initial Tank Retrieval Systems project will provide waste retrieval systems for ten underground double-shell storage tanks (DST). These retrieval systems will be capable of mobilizing, mixing, retrieving, and transferring radioactive tank wastes. A preliminary tank retrieval sequence was developed in April 1992. It identified the tanks requiring retrieval to meet the immediate goals of resolving tank safety issues, supporting treatment operations, and managing tank space to accomplish this work.

The FY ~~1995~~ 1996 appropriation will be used to ~~continue~~ complete Title II design, ~~initiate~~ complete advanced procurement, and initiate construction on the waste retrieval system for ~~the most urgent portion of the ITRS~~, tank 241-SY-101 or an alternate tank, ~~241-AY-102, and 241-SY-103~~ and initiate Title II design and advanced procurement for ~~the 241-SY-103~~ one more retrieval system.

2242

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-411, Solid Waste Operations Complex (SWOC) Project, Richland, Washington — TEC: $186,700 a/ TPC: $279,400 b/

Start Date: 2nd Qtr. FY 1994 — Completion Date: 4th Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 7,100	5,200 d/	$ 12,300	$ 1,543
1995	42,200	-7,021 c/	35,179	36,100
1996	5,500		5,500	5,500
1997	35,100		35,100	39,736
1998	98,621		98,621	103,821

a/ Plant and capital equipment cost estimate revisions were made as a result of an independent cost evaluation.
b/ Revisions were made to operations preparedness and startup estimate which decreased the expense portion of the total project costs.
c/ Reduction of $7,021,000 of current year funds for Productivity Savings.
d/ FY1994 Reprogramming.

3. Narrative:

The ~~FY 1994~~ SWOC Project includes three line item subprojects. The Waste Receiving and Processing (WRAP) Facility Module 2A, Project W-100, will provide a new facility for treatment of newly generated and retrieved solid wastes. The Enhanced Radioactive and Mixed Waste Storage Facility Phase V, Project W-112, will provide a storage and material handling facility that directly supports the WRAP facilities, an operations support/maintenance facility (the Hanford Central Waste Storage Support Complex (HCWSC)) to support overall Solid Waste Operations Complex (SWOC) management and maintenance needs, and SWOC infrastructure upgrades/expansion to support increased CWC operations. The Solid Waste Retrieval Facility, Phase I, Project W-113, will provide the facilities and equipment necessary to support a full-scale, single-trench retrieval effort to reclaim a portion of the post-1970 suspect transuranic (TRU) waste that has been stored in trenches at the Hanford site.

2243

1. Title and Location of Project: Intermediate Level and Low Activity Waste Vaults, Savannah River Site, Aiken, South Carolina	2a. Project No.: 94-D-417 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

2244

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-417, Intermediate Level and Low Activity Waste Vault #2, Savannah River Site, Aiken, South Carolina

TEC: $44,800 a/
TPC: $54,132 a/

Start Date: 4th Qtr. FY 1995 Completion Date: 4th Qtr. FY 2001

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 0 b/		$ 0	$ 0
1995	300		300	300
1996	2,704		2,704	2,704
1997	10,826		10,826	10,826
1998	8,600		8,600	8,600
1999	4,100		4,100	4,100
Outyears	18,270		18,270	18,270

a/ Cost estimate is preconceptual level only.
b/ FY 1994 Congressional Budget Amendment reduction of $1,000,000.

3. Warrative:

The overall Burial Ground Expansion (BGE) program provides a new Burial Ground Site to meet the SRS solid non-hazardous radioactive waste disposal/storage needs through the year ~~2012~~ 2024. This project is for construction of the next disposal facilities ~~as part~~ of the continuing BGE program.

The OPC portion of TPC is a management best estimate pending a detailed task-based analysis.

The FY 1996 funds will be used to ~~initiate~~ award lump sum procurement and ~~begin complete~~ detailed design.

2245

1. Title and Location of Project:	Building 374 Liquid Waste Treatment Facility, Rocky Flats Envr. Tech. Site, Golden, Colorado	2a. Project No.: 93-D-178 2b. Construction Funded

SIGNIFICANT CHANGES

- The TEC was reduced from $43,200,000 to $32,700,000 due to elimination of two subtasks.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-178, Building 374 Liquid Waste Treatment Facility, Rocky Flats Envr. Tech. Site, Golden, Colorado — TEC: $32,700 a/ TPC: $43,171

Start Date: 2nd Qtr. FY 1994 b/ Completion Date: 4th Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 2,700		$ 2,700	$ 0
1994	1,000		1,000	420
1995	3,300		3,300	2,800
1996	3,900		3,900	3,900
1997	11,800		11,800	11,800
1998	6,400		6,400	9,600
1999	3,600		3,600	4,180

a/ A baseline change proposal (BCP) was approved which details a reduction in cost based on a change in the project scope. Two of the fifteen subprojects, namely construction of a new two-story addition to house process equipment, and relocation of the cold process laboratory, were deleted from the scope. The new scope and cost were presented for validation in the Spring of 1994. The TEC and TPC information shown above reflects this cost and scope change.

b/ The scope change noted in "a" above has delayed the start date.

3. Narrative:

~~This project will upgrade the existing Building 374 waste treatment facility and add a new two story addition to the southeast corner of the building. The new addition will be approximately 50 feet by 70 feet and have a total of approximately 5,800 square feet of floor space. The three exterior walls shall be precast concrete "twin tee" panels and shall match the exterior walls of Building 374. The building shall be designed to meet seismic protection requirements. The roof and floors shall be of poured concrete construction. An enclosed loading dock shall be constructed on the east side of the addition. The project will consist of upgrading 15 systems: waste receiving, precipitation, acid neutralization, filtration, sludge immobilization, upgrade sludge immobilization capability, vent scrubbers, chemical preparation, general building upgrades, ventilation systems, berm around chemical tanks, wastewater storage tanks, waste transfer system, cold process laboratory and building a new product water tank.~~

~~The FY 1995 funding request will be used for design activities.~~

This project will upgrade all processes in the liquid waste treatment facility (LWTF), with the exception of the evaporator and the salt imobilization processes. The existing systems in the LWTF are in need of upgrade to maintain safety and meet RCRA requirements and capacity needs at the site. Thirteen subtasks are included in this project and are divided into three phases: Phase I - sludge filtration, new control and data acquisition systems, new wastewater and product water storage tanks, and chemical preparation ventilation; Phase II - waste receiving, chemical preparation, precipitation, neutralization, and chemical tank berms; Phase III - sludge immobilization, process vent scrubber, waste transfer system data collection, and new product water tanks.

2247

1. Title and Location of Project: Replacement of Cross-Site Transfer System, Richland, Washington	2a. Project No.: 93-D-182 2b. Construction Funded

SIGNIFICANT CHANGES

o Integration plans to combine certain design and construction activities with Project 90-D-172, Aging Waste Transfer Lines, have been completed, approved and implemented. However, each project will maintain its individual project number and funding profiles to completion of the project.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-182, Replacement of Cross-Site Transfer System, Richland, Washington

TEC: $47,200
TPC: $52,076

Start Date: 2nd Qtr. FY 1993 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 4,495		$ 4,495	$ 930
1994	6,500		6,500	1,186
1995	14,810a/	- 3,900 b/	10,910	14,810
1996	19,795		19,795	19,795
1997	3,600		2,200	5,165
1998	1,900		3,300	5,314

a/ Congressionally mandated reduction of $4,100,000.
b/ Use of prior year funds ($3,900,000) for uncosted offset.

3. Narrative:

This project will provide a replacement piping system for the existing cross-site transfer system. The replacement piping system will provide a long-term environmentally acceptable waste transfer route for treatment, storage and final disposal of 200 West Area Tank Farm Waste.

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OFFICE OF WASTE MANAGEMENT
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(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Multi-Function Waste Remediation Facility, Richland, Washington	2a. Project No.: 93-D-183 2b. Construction Funded

SIGNIFICANT CHANGES

o Improved project definition and Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) revision result in reduced TEC and TPC.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-183, Multi-Function Waste Remediation Facility, Richland, Washington — TEC: $1,215,300 a/ TPC: $1,462,000

Start Date: 2nd Qtr. FY 1993 Completion Date: 2nd Qtr. FY 2001 b/

2. Financial schedule (Federal Funds): b/

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 10,300		$ 10,300	$ 7,047
1994	45,660	- 4,250 e/	45,660	20,772
1995	88,605 c/	- 31,861 d/	42,000	65,000
1996	31,000		31,000	35,000
1997	146,575		146,575	140,000
1998	144,165		144,165	140,000
1999	125,291		125,291	120,000
2000	106,300		106,300	110,000
Outyears	553,515		564,009	577,481

a/ The TEC and TPC reflect the total costs for subprojects 01 and 02. The TEC for subproject 01 increased by $3,200,000. Other project costs, however, decreased by an equivalent amount. The MWTF TEC reflects the improved project definition at the completion of Title I design. For subproject 02 (IPM) the TEC and TPC are based on a planning estimate reflected in the TWRS Multi-Year Program Plan (MYPP). The TEC/TPC reflects Initial Pretreatment Module (IPM) scope changes per the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) revision in January 1994. Conceptual Design for the IPM will be completed in 2nd Qtr. FY 1996.

b/ The project construction schedule for the IPM was extended due to the January 1994 revision to the Tri-Party Agreement.

c/ Congressionally mandated reduction of $6,700,000

d/ Use of current year ($8,277,000) funds for Productivity Savings and prior year ($23,584,000) funds for uncosted offset.

e/ FY 1994 approved reprogramming 94-R-17.

3. Narrative:

~~This project will provide an additional four double shell tanks, each with 1,000,000 gallon capacity, to support interim safety storage of wastes stored in tanks presently on the safety watch list. FY 1995 appropriation will be used to continue Title I, project management, technology testing/development, and continuation of pilot plant work.~~

FY 1994-1996 funds will be used to prepare a hot pilot plant (pretreatment) facility. This pilot plant facility will be capable of processing all forms of anticipated radionuclide and other tank waste (e.g., Cs, Sr, Tc and organic wastes) in an integrated fashion which can be used to scale-up to full scale treatment facilities. These pilot plant effluents may be used in pilot scale low-level vitrification units. FY 1996 funds will be used to complete construction for this pilot plant. Pilot Plant will be in operation in FY 1997.

2251

1. Title and Location of Project: High-Level Waste Removal from Filled Waste Tanks, Savannah River, South Carolina	2a. Project No.: 93-D-187 2b. Construction Funded

SIGNIFICANT CHANGES

- Alignment of project schedule with High-Level Waste System Plan, Rev. 3, which includes all of the High-Level Waste Tank Farm operations from receipt of fresh wastes to the process and transfer facilities to deliver feed to, and receive recycle from, the Defense Waste Processing Facility (DWPF), the DWPF operation, and the key supporting operations such as In-Tank Precipitation and Extended Sludge Processing.

- TEC decrease due to implementation of Integrated Work Process and deletion of equipment storage building, centralized supported facility, annulus cleaning for Tanks 2 through 8, and Post Construction Modification Budgets.

- OPC decrease due to reduced assessment requirements (SRIP 5480.31.1A, Section 5.4) and revised task based analyses incorporating reductions for repetitive activities, more effective use of existing procedures and training, and implementation of Post Modification Testing Program to assess readiness for startup.

2252

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-187, High Level Waste Removal from Filled Waste Tanks, a/ Savannah River, South Carolina

TEC: $565,050 b/c/
TPC: $828,238 b/c/

Start Date: 1st Qtr. FY 1979 Completion Date: 4th Qtr. FY 2008 c/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation a/	Adjustments	Obligations	Costs
1993	$ 2,000		$ 0	$ 0
1994	3,000 d/	+ 192,420 e/	5,000	349
1995	26,525	- 1,700 f/	217,245	219,000
1996	19,700		19,700	22,596
1997	21,800		21,800	21,800
1998	37,000		37,000	37,000
1999	31,800		31,800	31,800
2000	30,500		30,500	30,500
2001	21,200		21,200	21,200
2002	37,500		37,500	37,500
2003	31,100		31,100	31,100
2004	27,700		27,700	27,700
2005	30,300		30,300	30,300
2006	28,700		28,700	28,700
2007	19,500		19,500	19,500
2008	6,005		6,005	6,005

a/ Beginning with FY 1995 funding, as reflected in this project data sheet, this title and line item number will refer to a planned grouping of six subprojects. Those projects include the original line item, three previously Operating Expense funded projects, and two future projects.
b/ This includes the subprojects 01, 02, 03, and 04. It does not include the TEC and TPC associated with the two future subprojects 05 and 06.
c/ Estimates are subject to Baseline Change Proposal approval.
d/ FY 1994 Budget Amendment reallocation of $10,230,000 to reflect delay in project consolidation and reprioritization of subprojects.
e/ This represents the Operational Expense (OPEX) funded costs through FY 1994 of the three previously OPEX funded projects.
f/ Use of current year ($1,700,000) funds for Productivity Savings.

3. Narrative:

The Waste Removal Program will provide, through a series of six subprojects, technical support, design, equipment, construction, and installation of waste removal facilities for all Type I, II, III and IV High-Level Radioactive Waste Tanks excluding those associated with the In-Tank Precipitation (ITP). A total of 47 waste tanks will be covered under this project. Facility modifications to allow processing of sludge prior to feeding to Defense Waste Processing [illegible] ided. Typically, the waste removal facilities include slurry [illegible] instrumentation and distributed controls systems (DCS). Each [illegible] moved and transferred to either ITP or Extended Sludge Processing (ESP) for eventual feed to the DWPF. Each of the subprojects will provide the facilities and infrastructure necessary to perform waste removal from the associated tanks. In addition to the typical waste removal facilities above, the infrastructure being provided by these subprojects include: new or expanded control rooms; ~~a centralized support facility and an equipment storage facility for staging and storing equipment~~ and caustic addition facilities. The waste removal process itself will be performed and funded by Operations. This project does not include Decontamination and Decommission (D&D) of the tanks.

The FY 1996 funds will be used to continue design and construction of additional high-level waste removal equipment and on salt tank farm infrastructure, ~~and sludge tanks supporting sludge batch #2~~ and Tanks to support continued ITP operations and continue tank farm infrastructure in support of sludge batch #2.

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OFFICE OF ENVIRONMENTAL MANAGEMENT
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(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	Mixed Waste Receiving and Storage Facility, Los Alamos National Laboratory, Los Alamos, New Mexico	2a. Project No.: 92-D-171 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-D-171, Mixed Waste Receiving and Storage Facility, Los Alamos National Laboratory, Los Alamos, New Mexico — TEC: $ 9,640 TPC: $10,280

Start Date: 3rd Qtr. FY 1994 — Completion Date: 3rd Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	$ 6,640		$ 6,640	$ 0
1993	3,000		3,000	0
1994	0	- 6,745 a/	(6,745)	13
1995	0		0	800
1996	1,105		1,105	1,200
1997	5,640		4,940	4,387
1998	0		700	3,240

a/ Use of prior year funds for uncosted reduction.

3. Narrative:

~~This project will consist of a reinforced concrete structure attached to the existing TRU waste treatment facility. It will contain 22,000 square feet to receive and store contaminated liquids and solids.~~

The Mixed Waste Receiving and Storage Facility (MWR&SF) will consist of a stand-alone structure at TA-63. The proposed facility will contain 16,500 square feet and will be constructed primarily of reinforced concrete. The building will support three functions: 1) receiving and storage for contaminated liquids and solids; 2) waste repackaging, and; 3) waste tracking and administration.

The receiving and storage facility will be a high bay structure having three segregated areas for mixed waste storage and handling. The largest storage area will be for storage of non-flammable mixed wastes. The second storage area will be for storage of flammable mixed waste. The third area will be a small bulking room for the repackaging and bulking of solid and liquid wastes. Wastes are received and stored in Department of Transportation (DOT) approved shipping containers.

The storage rooms and bulking room will be separated by four-hour fire-rated walls. The area will have controlled ventilation, fire protection, and monitoring equipment, and will provide secondary containment for spill control/fire water retention. The receiving and storage facility will also contain an access control airlock, change and decontamination rooms, a shipping/receiving area with a loading dock, and a mechanical equipment room. A 2,200 square foot support building containing administrative and support spaces will be constructed adjacent to the storage facility.

The FY ~~1993~~ 1996 funding will be used for ~~completing construction activities~~ project management, procurement and construction.

2255

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OFFICE OF WASTE MANAGEMENT
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(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Waste Management Environmental, Safety and Health (ES&H) and Compliance Activities, Various Locations	2a. Project No.: 92-D-188 2b. Construction Funded

SIGNIFICANT CHANGES

o The overall construction completion date has been revised from the fourth quarter of FY 1995 to the fourth quarter of FY 1997 due to a schedule change for Subproject 02. This change provides a more realistic construction schedule based on the financial schedule for the subproject.

2256

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-D-188, Waste Management Environmental, Safety and Health (ES&H) and Compliance Activities, Various Locations — TEC: $33,400 TPC: $38,140

Start Date: N/A — Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 0		$ 0	$ 0
1993	15,732 a/		15,732	1,002
1994	8,568	+ 857 b/	9,424	4,849
1995	2,846		2,846	12,783
1996	1,100		1,100	8,182
1997	0		0	6,584

a/ Funds in the amount of $14,732,000 were released through a reprogramming in November 1992 as approved in the FY 1992 Omnibus Reprogramming (number 92-R-40).

b/ Funds in the amount of $857,000 were released through a reprogramming (94-R-29) for the Sewage Collection System Rehabilitation.

3. Narrative:

This project ~~is being proposed~~ was established by the Office of Waste Management to fund a number of construction projects at various locations around DOE's Waste Management Complex that are ES&H and/or compliance-related activities. These subprojects will be addressed individually in the data sheet, and must undergo the same review process as any other construction line item proposed in this budget. These projects are generally limited in funding, scope, and specifically directed at maintaining compliance with existing regulations, DOE Orders and agreements. Since these changes occur on a real-time basis and cannot be anticipated, this consolidated line item approach will provide DOE the flexibility to react to significant technical, programmatic and regulatory changes that impact the programs. ~~Five~~ Six candidate projects have been identified as part of the financial reviews of the Department funding practices and have been included in this line item ~~through the FY 1993 Omnibus Reprogramming.~~ as follows: Sanitary Landfill, Rocky Flats, Sewage Collection System Rehabilitation, Process Waste Treatment Plant Upgrade, Oak Ridge Closed Loop Cooling System and Environmental and Safety Compliance, Richland.

~~The TPC for the project has increased from $35,813,000 to $37,040,000 partly as a result of a TPC increase for Subproject 01. The TPC for Subproject 01, Sanitary Landfill, Rocky Flats, has increased from $9,073,000 to $10,300,000. This increase resulted from accounting adjustments to more accurately reflect all operating expenses related to the subproject.~~

~~The overall construction completion date has been revised from the fourth quarter of FY 1995 to the fourth quarter of FY 1996 due to a schedule change for Subproject 02. This change provides a more realistic construction schedule based on the financial schedule for the subproject.~~

The Oil Dike 7/8 Upgrades project at Oak Ridge provides for the design and construction of a tanker transfer station, access platforms, transfer piping and pumps, painting the tanks, and fire protection for OD-7 as well as a breakroom, fire protection upgrade, drum transfer station, heating and ventilation, and modification of the perimeter dike on the floor of Building 9811-1 (OD-8).

FY 1996 funding will be used to continue construction funding.

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DEPARTMENT OF ENERGY
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(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Aging Waste Transfer Lines, Richland, Washington	2a. Project No.: 90-D-172 2b. Construction Funded

SIGNIFICANT CHANGES

- Integration plans to combine certain design and construction activities with Project 93-D-182, Replacement of Cross-site Transfer System, have been completed, approved and implemented. However, each project will maintain it's individual project number and funding profiles to completion of the project.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-172, Aging Waste Transfer Lines, Richland, Washington — TEC: $12,500 TPC: $16,193

Start Date: 3rd Qtr. FY 1990 Completion Date: 1st Qtr. FY 1997 a/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1990	$ 1,281		$ 1,281	$ 245
1991	4,000	$ - 2,000 b/	2,000	1,465
1992	6,000	- 5,600 c/	400	820
1993	0		0	61
1994	5,000		5,000	1,200
1995	3,819	-2,500 d/	1,319	4,000
1996	2,000		2,000	4,209
1997	500		500	500

a/ Project integration study was completed 1st Qtr. FY 1993. Study recommended integration of this project with Replacement of Cross-Site Transfer System project.
b/ FY 1991 Reprogramming 91-R-14 approved 8-2-91.
c/ FY 1992 approved reprogramming 92-R-40.
d/ Use of prior year funds ($2,500,000) for uncosted offset.

3. Narrative:

This project will provide a reliable long-term heat waste transfer system to connect aging waste tank farms to waste pretreatment facilities. ~~and future waste disposal treatment at the Hanford Waste Vitrification Plant (HWVP).~~

2259

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	RWMC TRU Waste Characterization and Storage Facility, Idaho National Engineering Laboratory, Idaho	2a. Project No.: 90-D-177 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-177, RWMC TRU Waste Characterization and Storage Facility, Idaho National Engineering Laboratory, Idaho — TEC: $127,500 TPC: $146,000

Start Date: 2nd Qtr. FY 1990 Completion Date: 3rd Qtr. FY 1998 a/b/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Prior Years	$ 50,925		$ 50,925	$ 9,486
1993	41,700		41,700	12,235
1994	21,700		21,700	24,249
1995	1,747 c/	- 8,500 d/	1,750	36,920
1996	1,428		1,425	17,218
1997	18,500		10,000	14,718
1998	0		0	12,674

a/ Includes Title I and II designs for all subtasks, starting the 2nd Quarter of FY 1990 and completing the final subtask by the 2nd Quarter of FY 1996. The completion date changed (previously 3rd Quarter of FY 1995) based on approval of change control board (CCB-069). The 58 month duration is the sum of design periods for the specific subtasks.

b/ Construction completion changed based on approval of Baseline Change Proposal, field number CCB-033. This date reflects the baseline completion of the TSA-RE Modifications. The construction of these facilities will be further delayed because the TSA-RE Project has been delayed. During FY 1994 a decision will be made on whether to build additional Type II modules near the existing modules or maintain the modifications as part of this project and delay project completion to conform to their expected completion date sometime after FY 2002.

c/ Includes Congressionally mandated reduction of $10,000,000.

d/ Use of prior year funds ($8,500,000) for uncosted offset.

3. Narrative:

The Radioactive Waste Management Complex (RWMC) Transuranic (TRU) Waste Characterization and Storage Facility Project provides for the design, procurement, and construction of a Resource Conservation and Recovery Act (RCRA) permitted facility at the Idaho National Engineering Laboratory (INEL) that will accept contact-handled (CH) TRU waste for characterization and storage. The facility consists of an operations control building, a waste characterization building, storage buildings and modifications to the transuranic storage area in the TSA retrieval building for storage. The facility and installed equipment have a design life of 25 years.

The FY ~~1995~~ 1996 funding will be used to construct two storage modules and initiate construction of the Waste Characterization Facility. Operating documents for the storage modules will be prepared and Operational Readiness Reviews will be preformed for the storage modules and the Operations Control Building. Preparation of operating documents for the Waste Characterization Facility and training of key personnel will commence.

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(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: TSA Retrieval Enclosure, Idaho National Engineering Laboratory, Idaho	2a. Project No.: 90-D-178 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-178, TSA Retrieval Enclosure, Idaho National Engineering Laboratory, Idaho

TEC: $ 51,200
TPC: $ 57,975

Start Date: 2nd Qtr. FY 1990 Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1990	$ 5,910		$ 5,910	$ 969
1991	30,600		30,600	2,447
1992	4,490		4,490	823
1993	0		0	2,585
1994	0		0	7,116
1995	7,594		7,594	23,073
1996	2,606		2,606	14,187

3. Narrative

The Idaho National Engineering Laboratory (INEL) Radioactive Waste Management Complex (RWMC) Transuranic Storage Area (TSA) Retrieval Enclosure project provides for the design, procurement, and construction of a weather-tight enclosure and retrieval equipment in which the waste presently stored on TSA pads can be retrieved on a year-round basis. The structure would also serve to prevent the spread of any contamination that could be released from breached or deteriorated waste package, or from a material handling accident encountered during retrieval operations.

2263

1. Title and Location of Project: Tank Farm Ventilation Upgrade, Richland, Washington	2a. Project No.: 89-D-173 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

2264

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 89-D-173, Tank Farm Ventilation Upgrade, Richland, Washington

TEC: $24,600
TPC: $33,784 b/

Start Date: 3rd Qtr. FY 1989 a/ Completion Date: 1st Qtr. FY 1997 b/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1989	$ 1,800		$ 1,800	$ 1,405
1990	9,769		9,769	300
1991	0		0	971
1992	4,231		4,231	1,192
1993	7,000		7,000	2,777
1994	1,000		700	3,112
1995	300c/	- 300 d/	300	10,685
1996	800		800	3,601
1997	0		0	557

a/ Work on the V-113 ventilation line ups started and abandoned in place in FY 1990. Site preparation was completed in FY 1993. In-farm construction on the ventilation system will start in FY 1995.

b/ Reflects revised construction completion date. TPC increase due to revised construction schedule and construction support requriements and additional project startup costs.

c/ Congressionally mandated reduction of $500,000.

d/ Use of prior year funds ($300,000) for uncosted offset.

3. Narrative:

This project will provide upgrades to the ~~essential control~~ ventilation and coding systems of the AY and AZ Tank Farm ~~support~~ for the safe and efficient storage of radioactive high heat liquid waste. Upgrades and improvements will be made to the ventilation and cooling system, the electrical standby power, and the instrument/control system.

~~The FY 1994 funding will be used for construction activities.~~

2265

1. Title and Location of Project: Replacement High-Level Waste Evaporator, Savannah River, South Carolina	2a. Project No.: 89-D-174 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

2286

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 89-D-174, Replacement High-Level Waste Evaporator, Savannah River, South Carolina — TEC: $118,200 a/ TPC: $167,852 a/

Start Date: 3rd Qtr. FY 1989 — Completion Date: 1st Qtr. FY 1998 a/b/

2. Financial schedule (Federal Funds): a/

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Previous	$ 3,520		$ 3,520	$ 1,167
1990	9,220		9,220	5,745
1991	11,330	+ 14,380 c/	25,710	9,883
1992	14,159 d/		14,159	13,385
1993	15,795		11,000	16,801
1994	12,974 e/		17,769	28,005
1995	18,000	- 5,000 f/	13,000	16,000
1996	11,500		11,500	13,500
1997	8,822		8,822	8,822
1998	3,500		3,500	4,892

a/ There are change requests pending which will change date construction ends, TEC and TPC. These change requests will correct accounting deficiencies and account for schedule extensions and design underestimate.
b/ Title I and II duration has increased to incorporate design changes; construction duration has increased due to incorporation of realistic co-occupancy assumptions.
c/ Accounting adjustment of $380,000 to correct previous accounting deficiencies and FY 1991 Reprogramming of $14,000,000.
d/ Correct funding irregularities of $14,000 (92-R-15).
e/ FY 1994 Congressional Budget Amendment reduction of $11,000,000.
f/ Use of current year funds ($5,000,000) for Productivity Savings.

3. Narrative:

This Replacement High-Level Waste Evaporator will provide the cost-effective waste concentration facility necessary ~~to continue~~ for waste solidification programs at the Savannah River Site. The proposed facility is capable of removing 7.6 million gallons of water each year from the waste complex after final processing through the existing Effluent Treatment Facility. Along with two other existing evaporators, it will be able to handle the additional volume of waste generated by the Defense Waste Processing Facility and associated waste tank farm processes ~~plus the byproduct waste of materials production facilities~~.

FY ~~1995~~ 1996 funds will be used to continue construction activities, ~~excluding~~ including ~~Tank 39 cooling coil installation and hot items~~ completion of Gravity Drain Line and Feed Line installation; evaporator vessel and DCS installation.

2267

1. Title and Location of Project:	Decontamination and Waste Treatment Facility, Livermore, California	2a. Project No.: 86-D-103 2b. Construction Funded

SIGNIFICANT CHANGES

- o TEC decreased from $74,000,000 to $68,005,000 due to rebaselining of project.
- o TPC decreased from $74,769,000 to $68,774,000 due to rebaselining of project.
- o Completion date remains 4th Quarter FY 2000.
- o Scope change:
  - · Deleted Subproject 2, upgrade of Building 494 to house Mixed Waste Management Facility Pilot Plant.
  - · Incorporated the Alternative Design Review (ADR) results which evaluated various options for meeting Lawrence Livermore National Laboratory's waste management needs. Integrated facility requirements for Mixed Waste Management Facility into the DWTF complex (i.e., integrated Subproject #2 into Subproject #1).
  - · Scope reduction resulted in cost savings of $5,995,000.

2268

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 86-D-103, Decontamination and Waste Treatment Facility, Livermore, California — TEC: $68,005 e/ TPC: $68,774 e/

Start Date: 3rd Qtr. FY 1986 — Completion Date: 4th Qtr. FY 2000

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Prior Years	$ 43,792 a/	· 25,000 b/	$ 9,957	$ 9,432
1994	10,260	· 8,000 c/	2,260	74
1995	5,900	· 905 d/	5,036	2,380
1996	8,885		17,421	11,996
1997	11,000		11,000	13,796
1998	11,134		11,000	13,125
1999	5,864		5,857	11,609
2000	5,075		5,474	5,593

a/ FY 1992 General Reduction of $2,060,000.
b/ $25,000,000 approved FY 1990 reprogramming for the Waste Isolation Pilot Plant.
c/ Prior year funds used for FY 1994 General Reduction.
d/ Use of current year funds ($905,000) for Productivity Savings.
e/ Rebaselining has resulted in revised scope and schedule and a $5,995,000 reduction to the TEC and TPC.

3. Narrative:

This project has experienced a number of scope changes since it's inception. The original scope in FY 1986 consisted of a Liquid Waste Processing Facility, a Decontamination Facility, an Operational Support Building and mechanical/electrical utility upgrades and site preparation. The project was located in the southeast corner of the laboratory and the Total Project Cost (TPC) was $11,700,000. Between 1987 and 1990, the location of the site was changed to the northeast corner due to difficulty in permitting the original location due to potential for seismic activity in this area of the site, and the scope was increased to include a Solid Waste Processing Building, an incinerator and burn pan, a boiler and chiller plant, a Reactive Materials Building and a Storage Building. The TPC increased to $40,900,000. In 1990, the Lawrence Livermore National Laboratory Director adopted the recommendation of an internal laboratory panel to delete the incinerator and burn plan from the scope of the project due to public opposition. In 1993, a new baseline was approved which deleted the incinerator and the decontamination building, and added the Real Time Radiography Building, the Transuranic handling facility and the upgrade of Building 494 for mixed waste process development and engineering, increasing the TPC to $74,769,000. In 1993, DOE Oakland did an Integrated Waste Management Study which evaluated the waste management needs of LLNL and concluded that the scope of DWTF did not meet these needs. This resulted in the Alternative Design Review (ADR), which further evaluated the laboratory's waste management needs and compared various options for meeting these needs. The Baseline Change Proposal approved in January 1995 is based on the results of the ADR. This revised baseline represents the final path forward for the design and construction of the facility. The scope is described in the Project Data Sheet which follows. Major changes from the previously approved scope are described below.

This project will enhance hazardous waste management at the Laboratory through the construction of approximately ~~69,370~~ 115,500 square feet of new hazardous waste management operations ~~facilities for decontamination and waste treatment functions~~ and house the Mixed Waste Management Facility ~~Subproject #01, and the upgrade of 30,000 square feet of existing space, and an addition of 1,250 square feet of new space~~ for mixed waste process development and engineering. ~~Subproject #02~~. This project will include the design and construction of seven new buildings. These facilities will be located in the northeast sector of the laboratory in an area that, based on the results of a geologic investigation and State inspection, meets the RCRA and State seismic permit requirements.

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2269

3. Narrative:

The project has been revised and will be designed and constructed in five phases. The first three phases are: (1) Site Improvement, (2) Mixed Waste Management Facility (MWMF)/Liquid Waste Processing Building building shells, boiler/chiller building and required equipment and facility utilities for MWMF, and (3) Remaining facilities except Operational Support Facility.

The FY ~~1995~~ 1996 funding will be used for continuing engineering ~~for Subproject #01 and the upgrade of Building (04, Subproject #02 and Phase 1 construction for site utilities~~ design for Phases 1, 2 and 3, completing construction for Phase I and initiating construction for Phase II. The Mixed Waste Management facility (MWMF) Pilot Plant will be housed ~~in Building (04~~ in DWTF Mixed Waste Management Facility/Liquid Waste Processing Building.

DEPARTMENT OF ENERGY
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(Changes from FY 1995 Congressional Buoget Request are denoted with a vertical line in left margin.)

OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Non-Radioactive Hazardous Waste Management, Savannah River, South Carolina	2a. Project No.: 83-D-148 2b. Construction Funded

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 83-D-148, Non-Radioactive Hazardous Waste Management, Savannah River, South Carolina

TEC: $ 96,406
TPC: $149,869

Start Date: 3rd Qtr. FY 1983 Completion Date: 1st Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Prior Years	$ 19,360 a/		$ 19,360	$ 11,767
1989 b/	0	+ 13,000 b/	13,000	12,104
1990	12,128	+ 1,800 b/	13,928	10,131
1991	15,000	+ 6,232 c/	21,232	8,747
1992	9,387 d/		9,387	6,190
1993	10,330 e/		3,000	8,103
1994	2,169 f/		9,499	20,994
1995	6,000		6,000	10,893
1996	1,000		1,000	7,477

a/ Funded by the Materials Production budget.
b/ Reprogrammed from 81-T-105, Defense Waste Processing Facility.
c/ Accounting adjustment to correct previous accounting deficiencies.
d/ Accounting adjustment to correct accounting deficiencies of $287,000.
e/ FY 1993 Budget Amendment of $718,000.
f/ FY 1994 Congressional Budget Amendment reduction of $7,600,000.

3. Narrative:

This project will provide facilities to treat and dispose of waste generated at the Savannah River ~~Plant~~ Site (SRS) in accordance with Federa and State regulations, including a Consolidated Incineration Facility (CIF). These waste include those considered hazardous under the Resource Conservation and Recovery Act (RCRA), low-level radioactive wastes, and mixed wastes ~~that are both radioactive and hazardous~~.

FY ~~1995~~ 1996 funds will be used to ~~complete construction~~ close out project.

~~Due to delays in receipt of the RCRA Part B Permit, scheduled completion date has changed to 4th Qtr. FY 1995. Delays and accounting adjustments have resulted in a TEC increase to $99,034,000. In addition, further analysis of startup and other OPC costs have contributed to a TPC increase.~~

2272

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project:	Defense Waste Processing Facility Saltstone Vault #2 Savannah River Site, South Carolina	2a. Project No.: a/ 2b. Operating Expense Funded

SIGNIFICANT CHANGES

- Date Physical construction starts has changed from 2nd quarter FY 1995 to 3rd quarter FY 1996 because the project funding has been delayed by two years.

- Date construction ends has changed from 4th quarter FY 1996 to 4th quarter FY 1997 because the project funding has been delayed by two years.

IV. B. Operating Expense Funded Project Summary

1. Project Title and Location: Project a/, Defense Waste Processing Facility Saltstone Vault #2, Savannah River Site, South Carolina

TEC: $17,490 b/
TPC: $18,315 b/

Start Date: 4th Qtr. FY 1991 Completion Date: 4th Qtr. FY 1997 b/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 1,000		$ 1,000	$ 538
1993	0		0	125
1994	161		161	400
1995	0		0	3,000
1996	7,568		7,568	5,327
1997	8,761		8,761	8,100

a/ It should be noted that this project is justified as an operating expense funded Construction Project. It has been reformatted only to comply with the reviewed DOE Order 5100.3. It is not intended to be funded as a construction line item.
b/ The escalation for moving construction completion date to 4th Qtr. FY 1997 is added into TEC.

3. Narrative:

Due to a ~~one~~ two year delay in funding for this project, the construction completion date of 4th Qtr. FY ~~1995~~ 1996 has been changed to 4th Qtr. FY ~~1996~~ 1997.

This project provides the design and construction of Vault Number 2 in the Z-Area saltstone disposal facility. The vault will be a concrete structure with approximate outside dimensions of 600 feet in length, 200 feet in width, and 25 feet in height. The interior of the vault will be divided into 12 cells which have approximate dimensions of 100 feet by 100 feet. The cells will be arranged into two rows of six cells. The cells will be filled with saltstone grout one at a time. The vault will have a permanent roof consisting of a combination of precast and cast-in-place concrete. Vault Number 2 will be built adjacent to, but not connected to, Vault Number 1.

2274

IV. B. Construction Funded Project Descriptive Summary

1. Title and Location: Project GPD-171, General Plant Projects, Waste Management - Defense, Various Locations

TEC: N/A
TPC: N/A

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1996

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1991	$ 20,583		$ 20,583	$ 4,117
1992	56,199		56,199	18,444
1993	76,037		76,037	42,081
1994	28,959 a/	- 23,443 b/	5,516	50,445
1995	16,832 c/d/	- 5,641 e/	15,797	39,281
1996	30,728		30,728	23,495
1997	0		0	18,002
1998	0		0	6,705
1999	0		0	2,290

a/ Reduction of $835,000 for the FY 1994 Budget Amendment.
b/ Use of prior year funds ($13,409,000) and current year ($10,034,000) for FY 1994 General Reduction.
c/ Use of $600,000 for Budget Amendment.
d/ FY 1995 Congressional reduction.
e/ Use of current year ($1,035,000) and prior year ($4,606,000) funds for Productivity Savings.

3. Narrative:

These projects provide various items of new construction, additions, alterations, and improvements to the lands, buildings, and utility systems at the Albuquerque, Idaho, Nevada, Oak Ridge, Richland, Rocky Flats, and Savannah River offices to support the waste management program needs in health, safety, environment, general support, and other program requirements. Some of the projects may be located on non-Government land.

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Mixed Waste Management Facility, Livermore, California	2a. Project No.: a/ 2b. Operating Expense Funded

SIGNIFICANT CHANGES

- Phase I cost based on Conceptual Design Report completed 3rd Qtr. FY 1994.
- The Mixed Waste Management Facility (MWMF) will be co-located with Liquid Waste Processing Building of Decontamination and Waste Treatment Facility (86-D-103). The upgrade of Building 494 has been canceled.

a/ This project is an operating expense funded construction project.

IV. B. Operating Expense Funded Descriptive Summary

1. Project Title and Location: Project a/, Mixed Waste Management Facility, Livermore, California

Cost for Phase I: $61,920 b/c/d/e/
Cost for Phase II: TBD

Start Date: 1st Qtr. FY 1993 Completion Date: Phase I, 4th Qtr. FY 1997 e/

2. Financial schedule (Federal Funds): c/d/

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 6,500		$ 6,500	$ 5,237
1994	10,000		10,000	10,797
1995	7,656		7,656	8,056
1996	15,312		15,312	14,778
1997	15,000		15,000	15,600
1998	7,452		7,452	7,452

a/ This project is an operating expense funded Construction Project.
b/ Phase I includes funding only initial technologies to be demonstrated.
c/ Cost based on conceptual design report.
d/ Phase I final cost will be determined upon completion of Systems Definitive Design. Cost for Phase I will include design, fabrication, installation, Operation Readiness, equipment procurement, and project management.
e/ Project scope, schedule and cost have changed. A baseline change proposal detailing these changes will be prepared in FY 1995.

3. Narrative:

This project is an operating expense funded Construction Project. It has been reformatted to comply with DOE Order 5100.3. It is not intended to be funded as a construction line item (i.e., "39~~5X~~ ER" account).

The Mixed Waste Management Facility (MWMF) at LLNL will satisfy pilot-scale requirements to demonstrate integrated technologies for the treatment of mixed low-level waste (MLLW) and provide design criteria to feed the design and construction of prototype and full-scale treatment facilities for the DOE complex ~~by FY 1995~~ ~~by FY 1997~~. If technologies are successfully demonstrated, they will be permitted to treat applicable MLLW streams. The testing and evaluation will be performed in ~~Building 494~~ the MWMF/LWPB (Liquid Waste Processing Building) located in the northeast sector of the laboratory, which is currently undergoing ~~upgrades to house these activities~~ Title I/II design activities under a separate line item, the Decontamination and Waste Treatment Facility, 86-D-103, ADS SF-3944. The ~~technologies to be evaluated at the MWMF are expected to focus on the following areas: Thermal Organic Systems; Aqueous Systems; Offgas Treatment Systems; Feed Preparation; and Stabilization/Final Form Preparation.~~ separate line item will provide an operational infrastructure ~~including shipping process, feed preparation, instrumentation and control, offgas, water treatment, final forms, etc. for evaluating various treatment process and include one or more treatment process initially~~ for the demonstration.

The FY ~~1995~~ 1996 funding will be used for ~~continuing engineering, permitting, procurement, fabrication and construction necessary for~~ start up of the initial MLLW treatment technologies for Phase I.

2277

1. Title and Location of Project: Tank 241-C-106 Sluicing Richland, Washington	2a. Project No.: TANK SLUICING g/ 2b. Operating Expense Funded

SIGNIFICANT CHANGES

o No significant changes.

g/ It should be noted that this project is justified as an operating expense funded construction project.

IV. B. Operating Expense Funded Project Summary

1. Project Title and Location: Project TANKSLUICING a/, Tank 241-C-106 Sluicing
Richland, Washington

TEC: $42,200
TPC: $59,300 b/

Start Date: 3rd Qtr. FY 1993 Completion Date: 1st Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 2,500		$ 2,500	$ 2,500
1994	12,400		12,400	12,400
1995	16,000		16,000	16,000
1996	7,694		7,694	7,694
1997	3,606		3,606	3,606

a/ It should be noted that this project is justified as an operating expense funded construction project. It has been reformatted only to comply with the revised DOE Order 5100.3. It is not intended to be funded as a construction line item.

b/ The total project cost is based on a modification to the Project Letter Report estimate. The Project Letter Report replaced the Conceptual Design Report, moved to a one-step definitive design, and accelerated the project schedule to resolve a high-heat Priority I safety issue associated with Tank 241-C-106 and to meet Tri-Party Agreement Milestone M-45-00.

3. Narrative:

This project will provide the systems, facilities, and utility upgrades required to retrieve the high-heat waste from single-shell tank (SST) 241-C-106. This project is expense-funded because the expected operational duration is less than one year. Any equipment found to have residual value at the end of the retrieval demonstration will be capitalized at that time.

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OFFICE OF WASTE MANAGEMENT
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Cap and Roof for Saltstone Vault #1, Savannah River, South Carolina	2a. Project No.: g/ 2b. Operating Expense Funded

SIGNIFICANT CHANGES

o No significant changes.

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IV. B. Operating Expense Funded Project Summary

1. Project Title and Location: Project a/, Cap and Roof for Saltstone Vault #1, Savannah River, South Carolina

TEC: $ 2,636
TPC: $ 2,848

Start Date: 4th Qtr. FY 1996 Completion Date: 4th Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 1,636		$ 1,636	$ 636
1997	1,000		1,000	2,000

a/ It should be noted that this project is justified as an operating expense funded construction project. It has been reformatted only to comply with the reviewed DOE Order 5100.3. It is not intended to be funded as a construction line item.

3. Narrative:

This project provides the design and construction of the cap and permanent roof for Vault #1 in Z-Area. The interior of the vault will be filled with grout and the roof will be placed on top of the grout.

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1. Title and Location of Project: Spent Nuclear Fuel Interim Dry Storage Facility Demonstration, Savannah River, South Carolina	2a. Project No.: a/ 2b. Operating Expense Funded

SIGNIFICANT CHANGES

o No significant changes.

a/ This project is an operating expense funding construction project.

IV. B. Operating Expense Funded Project Summary

1. Project Title and Location: Project SPENTFUE a/, Spent Nuclear Fuel Interim Dry Storage Facility Demonstration, Savannah River, South Carolina TEC: $61,500 b/ TPC: $71,250

Start Date: 3rd Qtr. FY 1995 Completion Date: 3rd Qtr. FY 2001

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 5,000		$ 4,000	$ 2,000
1996	2,400		3,400	5,400
1997	17,000		16,000	16,000
1998	16,000		16,500	17,000
1999	10,500		10,000	9,000
2000	8,600		9,100	7,000
2001	2,000		2,500	5,100

a/ It should be noted that this project is justified as an operating expense funded construction project. It has been reformatted only to comply with the revised DOE Order 5100.3. It is not intended to be funded as a construction line item.
b/ The TEC is based on a rough order of Magnitude Scoping Estimate.

3. Narrative:

The "SRS-IDSF Demo" will provide a new dry storage facility and staging/characterization equipment. The new dry storage facility will be an NRC, "commercially" licensable, dry storage design with minor modifications to enable increased data gathering. Staging/characterization will include calorimeter, gamma scan, weighing, canning, drying, and physical dimension measurement equipment. The staging/characterization equipment will be installed in existing facilities (RBOF and/or reactor basins). Staging/characterization equipment will be utilized in the SRS-IDSF Project to the extent possible and capitalized if used beyond the Demo.

The SRS-Interim Dry Storage Facility Demonstration (SRS-IDSF Demo) supports the SRS-IDSF Project.

The SRS-IDSF Project is required to enable safe interim (40-60 yr.) storage of SNF stored at the SRS. Existing facilities are reaching the end of their design life and leave risk factors greater than current codes, laws, and regulations allow. New facilities that comply with current codes, laws, and regulations, will reduce risk factors, and will minimize the potential litigation actions to bring existing facilities into compliance. DOE has determined current "wet storage" methods are not as cost effective as commercial dry storage methods over an interim time period. Therefore, the most prudent course of action is to complete an SRS-IDSF project as soon as possible to reduce current operations/maintenance costs associated with SNF storage and to reduce risks associated with current storage methods and facilities. The SRS-IDSF Project is being proposed as a FY 1998 MSA. Prior to completion of an SRS-IDSF Project, an SRS-IDSF Demo project is planned to be completed. The storage portion of the SRS-IDSF Demo Project will be capitalized and used as part of the SRS-IDSF Project.

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DEPARTMENT OF ENERGY
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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

OVERVIEW

TECHNOLOGY DEVELOPMENT

The Department of Energy faces the enormous challenge of cleaning up the waste that has been generated by more than four decades of nuclear weapons production at its sites across the United States. In some cases, there are no known methods by which to clean up contamination, and the methods that do exist are often extremely expensive or ineffective.

The Office of Technology Development (OTD) was established to develop new technologies or improve existing technologies that will manage DOE-generated waste faster, safer, and more economically than current environmental cleanup methods. To this end, OTD conducts an aggressive national program for applied research, development, demonstration, testing, and evaluation to develop high-payoff technologies.

Of the seven recognized technology development stages: Basic Research, Applied Research, Exploratory Development, Advanced Development, Engineering Development, Demonstration and Implementation, OTD's efforts build from applied research through demonstration to achieve implementation in partnership with private industry of high-payoff environmental technologies.

Uncertainties are inherent with any research program, and the allocations of the funding requested in this document represent the best estimates at the time this budget was formulated. It is possible that as events occur, priorities could change, and it may be necessary to redirect funds within the technology development budget categories.

Within this priority arrangement, OTD's environmental research and development efforts are being aligned with private sector interests through partnerships between laboratories and industry to place technologies in the marketplace as soon as possible. The five focus areas and supporting cross-cutting programs are designed to direct scarce research funds to successful resolution of those urgent problems.

FOCUS AREAS

The FY 1996 budget is organized around a new approach to managing DOE's environmental research and development activities that improve on the efficiencies begun with integrated demonstrations and integrated programs in prior years. The new approach focuses research and development efforts on the major problems facing the Department and on those later stages of technology development that most rapidly bring technology to implementation by industry in the environmental marketplace. The new approach is focused on overcoming the major obstacles to progress in implementing new technologies while assuring that stakeholder concerns are addressed and industry is involved early in the technology development process. Matching of priority cleanup sites with developing technologies will also help accomplish rapid technology implementation.

As a result of this new approach, the FY 1996 budget has been restructured from the FY 1994 and 1995 submissions to more adequately reflect the new focused program. Therefore, there is a more detailed breakdown of the budget in Section III, Activity Descriptions.

To meet the Department's most pressing environmental technology needs, five priority or "focus areas" for technology development have been designated. They are:

1) Mixed Waste Characterization, Treatment, and Disposal to manage low-level radioactively contaminated mixed waste. Conflicting regulations and lack of definitive mixed waste treatment standards impair mixed waste activities. Disposal capacity for mixed waste is expensive and severely limited. DOE now spends millions of dollars annually to store mixed waste because of the lack of accepted treatment technology and disposal capacity. DOE must pursue technologies that lead to better and less expensive characterization, retrieval, handling, treatment, and disposal of mixed waste.

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2) Radioactive Tank Waste Remediation to address the hundreds of large storage tanks containing hundreds of thousands of cubic meters of high-level mixed waste. Primary areas of concern are deteriorating tank structures and consequent leakage of their contents. Research and technology development activities must focus on the development of safe, reliable, cost-effective methods for characterization, retrieval, pretreatment, and final disposition of the wastes.

3) Contaminant Plume Containment and Remediation to address the uncontained hazardous and radioactive contaminants in soil and groundwater that exist throughout the DOE weapons complex. There is insufficient information at most sites on the contaminants' distribution and concentration. The migration of some contaminants threatens water resources and, in some cases, has already had an adverse impact on the offsite environment. Many of the current characterization, containment, and treatment technologies are ineffective or too expensive. Improvements are needed in characterization and data interpretation methods, containment systems, and in-situ treatment.

4) Landfill Stabilization to address the significant remediation challenges posed by numerous DOE landfills, which contain an estimated 3 million cubic meters of buried and/or retrievably stored waste contaminated with hazardous and/or radioactive materials. Migration of contaminants and potential source terms from DOE landfills, results in a threat to the environment, the public, and workers. Safer, more cost-effective, and efficient technologies/systems are needed to contain source-term migration and for landfill waste removal and processing for disposal.

5) Facility Transitioning, Decommissioning, and Final Disposition to transition, decommission, deactivate, and dispose of the aging DOE weapons complex facilities that are contaminated with radionuclides and hazardous wastes. The building scrap materials at the sites are a potential resource with a significant economic value, but current regulations lack clear release standards and thus discourage the recovery, recycling, and/or reuse of these resources. Development of enhanced technologies for the decontamination of these materials and effective communication of the low relative risks involved are promising avenues toward the recovery, recycle, and/or reuse of these resources. Also, material removal, handling, and processing technologies must be improved to enhance worker safety and reduce costs.

In addition to these focus areas, the technology development program consists of cross-cutting and support programs to assure cost-effective development and integration in a number of important cross-cutting activities, including technology transfer and commercialization, industry cooperation, robotics, efficient separations, and characterization, monitoring and sensors.

In the future, additional technology focus areas or cross-cutting programs may be added (or currently identified areas further partitioned) based on peer review or alteration of emphasis within DOE to ensure that research and technology development programs remain focused on Environmental Management's most pressing remediation and waste management needs.

BUDGET STRUCTURE

This budget presents the five focus areas and crosscutting and support programs are depicted in the following budget structure:

TREATMENT AND REMEDIATION TECHNOLOGY SYSTEMS
- Mixed Waste Characterization, Treatment, and Disposal (Includes FAC/DOIT/WGA)
- Radioactive Tank Waste Remediation
- Contaminant Plume Containment and Remediation
- Landfill Stabilization
- Facility Transitioning, Decommissioning, and Final Disposal

INNOVATIVE AND CROSSCUTTING TECHNOLOGY PROGRAMS
- Characterization, Monitoring, and Sensors
- Efficient Separations and Processing
- Robotics
- Innovative Technologies
- Pollution Prevention

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INDUSTRY PROGRAMS

TECHNOLOGY INTEGRATION
- Domestic
- International

PROGRAM SUPPORT/DIRECTION

PERFORMANCE

During FY 1995, through focusing the technology development program, a minimum of fifty new environmental technologies or systems will be bench- or full-scale demonstrated and a minimum of twenty-four environmental technologies will be transferred to private industry and to Federal facilities.

Key objectives included in the FY 1996 technology development budget request are:

1) Mixed Waste Characterization, Treatment, and Disposal: Meet Environmental Management Strategic Plan goal of completing radioactive, pilot-scale demonstrations to address ninety percent of current DOE mixed waste by 1997 in order to meet the requirements of the Federal Facilities Compliance Act.

2) Radioactive Tank Waste Remediation: Demonstrate technologies to ensure ninety-nine percent waste removal and treatment as mandated by the Tri Party Agreement.

3) Contaminant Plume Containment and Remediation: Full-scale field demonstrate in situ technology systems for detection, containment and treatment of metals, radionuclides and dense, non-aqueous phase liquid contaminant's by 1997.

4) Landfill Stabilization: Demonstrate landfill remediation technologies/systems for source-term containment.

5) Facility Transitioning, Decommissioning and Final Disposal: Demonstrate processes for concrete decontamination (to achieve December 1997 goal), metal decontamination, concrete and metal structure dismantlement, and metal recycling.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(obligations in thousands)

SUMMARY OF CHANGES

Technology Development

FY 1995 Appropriation	$418,759
- Adjustments - Procurement Reform	-1,400
FY 1995 Adjusted	$417,359
- Increase in emphasis on implementation of a new approach to managing DOE's environmental research and technology development activities and Federal Advisory Committee to Develop On-Site Innovative Technologies (FAC/DOIT) including stakeholder involvement to assure the successful transfer, commercialization, and implementation of newly-developed technologies and Industry Programs	+44,053
- Increase Program Support to initiate systems engineering studies to evaluate costs, safety and risk for selected technology systems	+2,728
- Increase Technology Integration activities to continue development of effective programs and customer-driven services to stimulate public/private partnerships, increased US/international environmental competitiveness and enhanced strategic program integration	+7,251
- Transfer Education, Decision Support and Risk Management activities to the Analysis, Education, and Risk Management decision unit:	
Education Development	-14,852
Decision Support	-6,400
Risk Management	-17,500
Program Support	-615
Program Direction	-792
- Transfer Analytical Laboratory, Emergency Management, and Hazardous Materials Training activities to the Compliance and Program Coordination decision unit:	
Analytical Laboratory Management	-16,201
Emergency Management	-2,962
Hazardous Materials Training Program	-13,000
Program Support	-5,285
Program Direction	-2,574
- Transfer Liaison and Communications activities to the Transportation Management decision unit	-700
FY 1996 CONGRESSIONAL BUDGET REQUEST	$390,510

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Technology Development

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Treatment and Remediation Technology Systems					
Operating Expenses	$ 147,036	$ 144,061	$ -750	$ 143,321	$ 188,653
Capital Equipment	19,503	15,057	-650	14,397	15,147
Subtotal, Treatment and Remediation Technology Systems	$ 166,539	$ 159,118	$ -1,400	$ 157,718	$ 203,800
Innovative & Crosscutting Technology Program					
Operating Expenses	$ 74,482	$ 71,901	$ 0	$ 71,901	$ 72,424
Capital Equipment	7,022	8,328	0	8,328	7,776
Subtotal, Innovative & Crosscutting Technology Program	$ 81,504	$ 80,229	$ 0	$ 80,229	$ 80,200
Industry Programs Operating Expenses	$ 26,313	$ 43,200	$ 0	$ 43,200	$ 41,200
Technology Integration Operating Expenses	$ 18,637	$ 9,789	$ 0	$ 9,789	$ 17,040
Program Support Operating Expenses	$ 37,194	$ 38,054	$ 0	$ 38,054	$ 33,271
Program Direction Operating Expenses	$ 14,942	$ 16,754	$ 0	$ 16,754	$ 14,999
Education and Integrated Risk Management Initiative Operating Expenses	$ 21,479	$ 38,752	$ 0	$ 38,752	$ 0

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LEAD TABLE - Technology Development (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Infrastructure Programs					
Operating Expenses	$ 25,189	$ 24,463	$ 0	$ 24,463	$ 0
Capital Equipment	2,000	1,400	0	1,400	0
Construction	0	7,000	0	7,000	0
Subtotal, Infrastructure Programs	$ 27,189	$ 32,863	$ 0	$ 32,863	$ 0
TOTAL	$ 393,797	$ 418,759	$ -1,400	$ 417,359	$ 390,510
Summary					
Operating Expenses	$ 365,272	$ 386,974	$ -750	$ 386,224	$ 367,587
Capital Equipment	28,525	24,785	-650	24,135	22,923
Construction	0	7,000	0	7,000	0
Total Program	$ 393,797	$ 418,759	$ -1,400	$ 417,359	$ 390,510
Staffing (FTEs)	168	163	0	163	146

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(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE
Technology Development

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Los Alamos National Laboratory	$ 14,540	$ 11,172	$ 0	$ 11,172	$ 0
Albuquerque Operations Office	13,365	12,810	0	12,810	0
Sandia National Laboratories	25,657	19,357	0	19,357	0
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 53,562	$ 43,339	$ 0	$ 43,339	$ 0
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (West)	$ 0	$ 245	$ 0	$ 245	$ 0
Chicago Operations Office	9,125	9,566	0	9,566	0
Ames Lab	5,020	4,099	0	4,099	0
Brookhaven National Lab	3,013	1,706	0	1,706	0
Argonne National Lab (East)	14,875	12,238	0	12,238	0
Subtotal, CHICAGO OPERATIONS OFFICE	$ 32,033	$ 27,854	$ 0	$ 27,854	$ 0
IDAHO OPERATIONS OFFICE					
Idaho National Engineering Lab	$ 1,111	$ 864	$ 0	$ 864	$ 0
Grand Junction Project Office	1,750	1,719	0	1,719	0
Idaho Operations Office	38,168	34,570	0	34,570	0
Subtotal, IDAHO OPERATIONS OFFICE	$ 41,029	$ 37,153	$ 0	$ 37,153	$ 0
MORGANTOWN ENERGY TECHNOLOGY CENTER					
Morgantown Energy Technology Center	$ 27,938	$ 30,367	$ 0	$ 30,367	$ 0
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 5,595	$ 5,272	$ 0	$ 5,272	$ 0
OHIO FIELD OFFICE					
Ohio Field Office	$ 0	$ 98	$ 0	$ 98	$ 0
Fernald Environmental Management Project	1,619	3,966	0	3,966	0
Subtotal, OHIO FIELD OFFICE	$ 1,619	$ 4,064	$ 0	$ 4,064	$ 0

FIELD OFFICE FUNDING BY SITE - Technology Development (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 38,085	$ 31,687	$ 0	$ 31,687	$ 0
PITTSBURGH ENERGY TECHNOLOGY CENTER					
Pittsburgh Energy Technology Center	$ 5,511	$ 9,678	$ 0	$ 9,678	$ 0
ROCKY FLATS OFFICE					
Rocky Flats Office	$ 0	$ 200	$ 0	$ 200	$ 0
Rocky Flats Plant	8,517	6,043	0	6,043	0
Subtotal, ROCKY FLATS OFFICE	$ 8,517	$ 6,243	$ 0	$ 6,243	$ 0
RICHLAND OPERATIONS OFFICE					
Richland Operations Office	$ 27,542	$ 26,840	$ 0	$ 26,840	$ 0
Pacific Northwest Lab	32,658	24,789	0	24,789	0
Subtotal, RICHLAND OPERATIONS OFFICE	$ 60,200	$ 51,629	$ 0	$ 51,629	$ 0
OAKLAND OPERATIONS OFFICE					
Oakland Operations Office	$ 0	$ 1,100	$ 0	$ 1,100	$ 0
Lawrence Berkeley Lab	1,860	2,000	0	2,000	0
Lawrence Livermore National Lab	9,506	5,627	0	5,627	0
Energy Technology Engineering Center	300	1,375	0	1,375	0
Subtotal, OAKLAND OPERATIONS OFFICE	$ 11,666	$ 10,102	$ 0	$ 10,102	$ 0
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Site	$ 44,621	$ 18,541	$ 0	$ 18,541	$ 0
ALL OTHER	$ 63,421	$ 142,830	$ -1,400	$ 141,430	$ 390,510
TOTAL	$ 393,797	$ 418,759	$ -1,400	$ 417,359	$ 390,510

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. **Preface**: Treatment and Remediation Technology Systems

Treatment and Remediation Technology Systems is organized by focus areas, which will provide the environmental systems needed to meet the Department of Energy's (DOE) most urgent cleanup problems. These problems are: mixed waste; tanks containing radioactive waste; contaminated soil and groundwater; buried waste in landfills; and contaminated inactive facilities.

These five focus areas are being pursued to provide new and improved technology systems to accomplish the management and cleanup of DOE's weapons complex wastes. Emphasis is given to innovative systems that reduce cleanup costs, enhance safey of workers and public, and shorten the time required for cleanup.

In FY 1996, a systems approach to technology development is the basis for fast-track implementation of new technologies through the focus areas in partnership with industry technology providers, stakeholders, and technology users.

A. Mixed Waste

The Mixed Waste Focus Area is a concerted effort to demonstrate and deliver technologies and treatment systems, which can be used to treat the Department's mixed waste inventory. The current inventory of 169,000 m3 is estimated to increase to approximately 1,200,000 m3 within the next five years as a result of environmental restoration and facility decontamination and decommissioning activities.

A specific target of this Focus Area is to conduct at least three pilot-scale waste treatment technology demonstrations by the end of FY 1997. These demonstrations will be designed so that cumulatively they will have the capability to treat a minimum of ninety percent of the Department's current mixed waste inventory. Technologies will be demonstrated in the areas of waste destruction and waste stabilization, with supporting work being performed in the areas of characterization and advanced process monitoring and control. Examples of the waste treatment technologies include plasma arc fixed-hearth processing, vitrification, catalyzed wet oxidation, moltem metal processing, molten salt oxidation, and supercritical water oxidation. In addition, the mixed waste focus area will be pursuing closed loop treatment systems, which consist of continuous emmission monitors in conjunction with air diversion and capture equipment. Other treatment options, such as polymer encapsulation, will also be provided. All radioactive demonstrations will be performed as early as possible. The Federal Advisory Committee to Develop On-Site Innovative Technologies (FAC-DOIT) will be involved to enhance acceptability and permitting of these innovative technologies. The objective of this activity is to continue providing financial assistance to the Western Governors Association (WGA) initiative in support of a Memorandum of Understanding (MOU) between DOE, Department of Defense (DOD), Department of the Interior (DOI), and the Environmental Protection Agency (EPA) to establish a more cooperative approach for the development of technical solutions to Environmental Management problems shared by the Federal and private sector in the western States, through the FAC-DOIT support working groups, roundtables, and workshops to share information of success in implementation of technologies and obtain recommendations and advice to facilitate stakeholder partnerships to expedite deployment and testing of innovative cleanup technologies. Other FY 1996 performance goals include the transfer of: off-gas cleanup system; integrated compact vitrification system, microwave solidification; polymer solidification; non-radioactive plasma fixed hearth, including robotic material handling; thermal desorption, and non-thermal plasma off-gas destruction. In addition, a minimum of thirty-five percent of this technology budget will be subcontracted to private industry.

By the end of FY 1995 the Mixed Waste Focus Area will have completed the following: title design of pilot-scale plasma hearth system and commencement of fabrication; field-scale vitrification demonstration on Oak Ridge West End Treatment Facility (WETF) sludge; design and demonstrate a catalyzed wet oxidation system (DETOX process), demonstration of the molten metal process; design a supercritical wet oxidation (SCWO) pilot plant; and bench scale demonstration of microwave solidification of TRU wastes. In addition, crosscutting supporting activities in

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the areas of characterization, separation, and robotics are described in the Innovative and Crosscutting program section. The DOE procured private industry involvement is described in the technology development industry program section. This is to ensure maximum efficiency and maximum return investment.

In FY 1996 the Mixed Waste Focus Area will perform at least fourteen demonstrations. Examples of these include plasma arc treatment (radioactive, field-scale), molten metal processing, molten salt oxidation, catalyzed wet oxidation, closed loop treatment systems, vitrification (radioactive, compact field-scale system), final waste form testing methodologies, non-destructive evaluation/non-destructive analysis (NDE/NDA) of unopened waste containers, microwave solidification off-gas treatment system, microencapsulation, polymer solidification, surface organic contaminant removal, additional alternatives to thermal treatment, and on-line, real-time process monitors and controls.

B. Radioactive Tank Waste Remediation

The objective of this Focus Area is to demonstrate and deliver, under simulated and actual field conditions, technologies to characterize, retrieve, treat and dispose of wastes stored in 332 underground storage tanks (USTs) across the DOE complex. Many of these tanks are leaking and most contain intensively radioactive and highly hazardous materials. The Focus Area targets five sites: Hanford, Savannah River, Oak Ridge, Idaho, and Fernald. Combined, these sites' USTs contain more than 100 million gallons of radioactive waste. The Focus Area is demonstrating technology systems for: in situ characterization of radioactive and hazardous wastes, including a Light Duty Utility Arm for deployment of these systems in tanks; the dislodging and removal of the various waste forms (liquid, sludge, saltcake) from the tanks; and the processing of waste to extract radionuclides, destroy applicable components, and change the waste into forms that can be better, more safely, and less expensively handled, stored, and disposed of. In addition, crosscutting supporting activities in the areas of characterization, separations, and robotics are described in the Innovative and Crosscutting program section. The DOE procured private industry involvement is described in the technology development industry program section.

The specific goal of the Radioactive Tank Waste Remediation Focus Area is to: demonstrate the ability to retrieve and treat liquid tank waste by June 1997 to comply with the Hanford Tri-Party Agreement (TPA), and, in the long-term, demonstrate and deliver technology systems for the safe and efficient remediation of waste tanks across the DOE complex. To meet this goal, in FY 1996 at least six improved technologies/systems will be demonstrated: real-time tank integrity inspection and waste mapping with the Light Duty Utility Arm System; multiple waste constituent characterization technologies; the Compact Processing Unit for cesium removal; radioactive sample retrieval and in-situ waste analysis with the Light Duty Utility Arm; cross-flow filtration for solid/liquid separation; and low pressure waterjet tools for tank waste removal. The technology demonstration, testing, and evaluation efforts will provide four improved technologies/systems available for transfer, and three technologies/systems that will be recommended for inclusion in final Decision Documents at DOE sites. At least 15 percent of the budget will be directed to the private sector, and a 1:1 cost sharing achieved. A return on investment of on the order of 5 to 1 is anticipated.

C. Contaminant Plume Containment and Remediation

The Plumes Focus Area addresses DOE's estimated 600 billion gallons of contaminated groundwater and 200 million cubic yards of contaminated soil, of which more than one third is thought to contain radioactivity. Our mission is to develop and demonstrate in the near term technologies for the containment of contaminant plumes and treat soil and groundwater to destroy or remove contaminants to restore groundwater quality to a level consistent with future land use. Goals are to accomplish the following by FY 1997: 1) control further spread of plumes at DOE sites, 2) demonstrate technologies for in situ treatment or removal of selected metals from groundwater, and 3) demonstrate technologies for detection and in situ treatment of dense, non-aqueous phase liquid contaminants (DNAPL) in the subsurface. The technical strategy is to provide technologies to first contain plumes, then treat the contaminated groundwater and finally treat the contaminated soil to prevent further contamination to the groundwater resource. As a general rule, the focus of this program is to take the lead in the demonstration of technologies, which address the DOE specific groundwater problems such as radioactive plumes. Where a technology is needed by the Office of Environmental Restoration and Waste Management to address a plume related problem that is of a more generic nature i.e. DNAPLs, the activities will be leveraged as much as possible with the activities of other Federal Agencies to ensure close cooperation and efficient use of Federal R&D funds. In addition, crosscutting supporting activities in the areas of characterization, separations, and robotics are described in the Innovative and Crosscutting program section. The DOE procured private industry involvement is described in the technology development industry program section. In FY 1996 the goal of the Plume Focus Area is to make available for transfer more than fifteen remediation technologies such as: reactive barriers for

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radionuclides and organics, ex-situ biosorption of uranium from groundwater, magnetic separation of radionuclides from groundwater, electrokinetic migration/removal of uranium and heavy metals, mobile lab based characterization methods for metals in groundwater, remote sensing systems, DNAPL detection systems, extraction/remediation systems for DNAPLs, in-well removal methods for metals in groundwater, advanced drilling and measurement while drilling systems, aerobic/anaerobic bioremediation of organics from groundwater and soils, and methods to destroy PCBs; and to direct more than sixty-five percent of the funding to industry (50 percent) and universities (15 percent) to ensure that a capable U.S. industry is available to cleanup the Federal sites. To facilitate the acceptance of the technologies demonstrated in this focus area, the users, other Federal Agencies, stakeholders and regulators are actively involved in the entire technology development process.

D. Landfill Stabilization

The objective of the Landfill Stabilization Focus Area is to make major advances in the near term by demonstrating and delivering safer, more cost-effective and efficient technologies for the management and remediation of landfills. The scope of this focus area is to demonstrate technologies that find application across the DOE-complex so that these technologies can be incorporated into the appropriate regulatory and compliance decision documents. One of the major near term goals of the Landfill Stabilization Focus Area is to demonstrate the capability to contain potential source terms that may show migration by January 1997. To facilitate the acceptance and implementation of landfill stabilization technologies across the DOE complex, technology developers and users, regulators, and stakeholders are an integral part of the focus area management structure and decision-making process. The strategy of the focus area is to demonstrate: interim and long-term containment and capping technologies to contain migration of source terms; stabilization technologies to provide interim and long-term in situ stabilization of buried waste; removal technologies to provide selective/"hot spot" or full-pit retrieval options; treatment and process diagnostics technologies for the ex situ treatment of excavated landfill waste; and assessment technologies to provide site assessment, waste assay, and long-term monitoring options. In addition, crosscutting supporting activities in the areas of characterization, separations, and robotics are described in the Innovative and Crosscutting program section. The DOE procured private industry involvement is described in the technology development industry program section. In FY 1996 the Landfill Stabilization Focus Area's performance goals are to demonstrate up to thirty-three technologies/systems, make available for transfer up to seven technologies/systems and direct a minimum of fifty percent of its technology budget to the private sector with emphasis on Section 8(a), (small minority and disadvantaged firms, women owned firms, and small businesses). Examples of these technologies include advanced landfill covers for source term containment, in-situ buried waste encapsulation and treatment techniques for in situ stabilization, retrieval and waste conveyance systems, ex situ soils treatment systems, DC graphite arc furnace and system diagnostics, drum and waste assay system, and non-intrusive site characterization techniques.

E. Facility Transitioning, Decommissioning, and Final Disposition

The objective of the Facility Transitioning, Decommissioning, and Final Disposition Focus Area is to develop and demonstrate improved processes for facility shutdown and stabilization; surveillance and maintenance; sampling, imaging, and characterization; decontamination and dismantlement, recycle and disposition. The Focus Area is attempting to solve the following problems. There are 1,200 facilities at multiple field locations that require deactivation, decommissioning and disposition. The inventory projected to grow to about 20,000 permanent and temporary buildings and structures. Industrial and occupational risks dominate the risks from exposure to radiological and hazardous substances. In the near term, the very high costs for shutdown and stabilization and for surveillance and maintenance will absorb the majority of dollars budgeted for decommissioning. The near-term goals of the Focus Area are to provide technologies for deactivation, decommissioning, and disposition of contaminated facilities and building materials that will reduce schedules and life cycle costs. In FY 1996, field demonstrations of several processes and systems for stabilization and decontamination and dismantlement will be conducted, as well as two field demonstrations of material disposition processes. In addition, crosscutting supporting activities in the areas of characterization, separations, and robotics are described in the Innovative and Crosscutting program section. The DOE procured private industry involvement is described in the technology development industry program section. In FY 1996, the Facility Transitioning, Decommissioning, and Final Disposition Focus Area's performance goals are to demonstrate twenty-five improved processes in the laboratory and the field, make seven improved processes available for transfer to Decontamination Service Companies and Demolition Service Companies, and direct a minimum of sixty percent of the budget to the private sector.

In FY 1996, technology demonstrations will be performed for: chemical extraction, electro-kinetics, and wall scabbling processes for concrete decontamination; concrete cutting and dismantlement; chemical flushing and liquid nitrogen/carbon dioxide metal decontamination; metal dismantlement processes using robitic delivery systems; reactor dismantlement; spent fuel pool stabilization; and plutonium facility deactivation

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processes for gloveboxes and solutions.

II. A. Summary Table: Treatment and Remediation Technology Systems .

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Mixed Waste Focus Area	$ 56,457	$ 33,660	$ 60,900
Radioactive Tank Waste Remediation	23,485	23,573	28,500
Contaminant Plume Containment and Remediation .	48,130	46,236	54,100
Landfill Stabilization	33,953	39,306	42,500
Facility Transitioning, Decommissioning and Final Disposition	4,514	15,943	17,800
Total, Treatment and Remediation Technology Systems	$ 166,539	$ 157,718	$ 203,800

II. B. Laboratory and Facility Funding Table: Treatment and Remediation Technology Systems

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Grand Junction Project Office	$ 745	$ 600	$ 0	$ -600
Morgantown Energy Technology Center	0	1,350	0	-1,350
Ames Lab	234	0	0	0
Los Alamos National Laboratory	5,281	3,478	0	-3,478
Sandia National Laboratories	11,425	8,459	0	-8,459
Argonne National Lab (East)	8,027	6,557	0	-6,557
Brookhaven National Lab	2,219	925	0	-925
Fernald Environmental Management Project	1,411	3,024	0	-3,024
Idaho Operations Office	28,493	27,849	0	-27,849
Energy Technology Engineering Center	300	1,375	0	-1,375
Nevada Operations Office	20	50	0	-50
Oak Ridge Operations Office	19,694	15,400	0	-15,400
Pittsburgh Energy Technology Center	5,163	8,538	0	-8,538
Pacific Northwest Lab	20,129	13,554	0	-13,554
Richland Operations Office	12,268	10,744	0	-10,744
Rocky Flats Plant	7,175	4,632	0	-4,632
Lawrence Berkeley Lab	760	423	0	-423
Lawrence Livermore National Lab	3,775	2,413	0	-2,413
Savannah River Site	26,712	10,615	0	-10,615
All Other	12,708	37,732	203,800	166,068
Total, Treatment and Remediation Technology Systems	$ 166,539	$ 157,718	$ 203,800	$ 46,082

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Treatment and Remediation Technology Systems			
Mixed Waste Focus Area			
Destruction of Hazardous Constituents and Consolidation of Radionuclides and Heavy Metals	Industrial effort on the fixed-hearth plasma arc treatment process performed in first generation pilot-scale system. Demonstrated applicability to a variety of surrogate waste types.	Prepare and initiate second generation pilot scale demonstrations of the fixed-hearth plasma arc treatment process (including off-gas system) using non-radioactive surrogates. Plan bench scale demonstration and technology transfer efforts with radioactive waste stream for FY 1996-1997. These efforts utilize industrial partners. Industrial partner will conduct pilot-scale metal waste melting demonstration. Initiate advanced process control using on-line real time monitors and advanced control algorithms.	Complete pilot scale demonstration of the fixed-hearth plasma arc treatment process using non-radioactive surrogates. Conduct radioactive bench-scale demonstration and determine partitioning of radionuclides. Design, build, permit, and initiative testing of the radioactive field-scale demonstration. Work will include robotics for both front- and back-end material handling. System will contain controlled release treatment of gaseous products and on-line real time process monitors and controls.
			$ 9,875
	Completed feasibility studies and selected vendor for thermal desorption demonstration. Initiated site selection and preparation activities. Performed bench-scale demonstration of wet catalytic oxidation for combustible solids.	Install and conduct demonstration of thermal desorption technology. Complete detailed design of additional destruction/stabilization technologies (alternatives to incineration) for demonstration and initiate installation of test unit(s). Select site and conduct pilot-scale demonstration of wet catalytic oxidation of surrogate and actual mixed wastes.	Complete installation and conduct demonstration of an additional destruction technology. Coordinate and integrate testing program to meet national objectives through studies on additional and more complex waste forms. Begin design of full-scale unit for thermal desorption technology.
			$ 2,049

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III. Treatment and Remediation Technology Systems (Cont'd):
Mixed Waste Focus Area (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Destruction of Hazardous Constituents and Consolidation of Radionuclides and Heavy Metals (Cont'd)	Continued program activities to support the design, construction, and demonstration of a Supercritical Water Oxidation (SCWO) pilot plant in coordination with DOD. Completed evaluation of alternative SCWO reactor concepts. Completed design of the SCWO pilot plant for hazardous waste.	Perform the hazardous waste pilot plant development activities to support the design, construction, and demonstration of a mixed waste SCWO pilot plant. Complete development of the SCWO pilot plant.	Complete non-radioactive testing and demonstration of the SCWO pilot plant with DOE hazardous and surrogate mixed wastes. Initiate program activities to support the design, construction, and demonstration of a SCWO pilot plant for treatment of mixed waste. Prepare EIS and PSAR for the SCWO mixed waste pilot plant. $ 6,335
	Initiated bench-scale engineering tests on catalytical chemical oxidation (CCO), to show technical feasibility to develop physical constants for subsequent system design and scale-up, and to select technologies for demonstration and transfer to the Office of Waste Management in the FY 1995-1997 period.	Continue bench scale engineering tests to show technical feasibility and to develop design data for subsequent systems design and scale-up of CCO. Support pilot scale system development.	Conduct a radioactive pilot demonstration of the CCO process to catalytically oxidize the organic constituents of waste in a contained reactor. $ 6,614
	Performed off-gas monitoring demonstrations to support program requirements, such as monitoring of alpha-emitting substances. Continued development of a cleanable, reusable HEPA filter. Conducted systems analysis to improve efficiencies of near-term commercial technologies as required with incorporation into systems in FY 1995-1996.	Develop off-gas monitoring, control, and treatment approaches in thermal treatment demonstrations. Continue adaption/incorporation of near-term commercial technologies into the Mixed Waste Focus Area thermal treatment systems (e.g.:plasma, vitrification).	In preparation for the field-scale demonstration of the plasma fixed-hearth process on mixed waste, test a controlled release off-gas system with appropriate process monitoring and control (continuous emission monitors and control loop electronics) hardware. $ 8,850
	$ 50,997	$ 32,027	$ 33,723

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III. Treatment and Remediation Technology Systems (Cont'd):
Mixed Waste Focus Area (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Stabilization of Hazardous Constituents and Radionuclides for Disposal	Conducted proof-of-feasibility radioactive testing for "Vitrify to Dispose" effort. Planned for pilot level studies of operational limits for combustible loading and continued examination of compositional limits for metals loading with planning for pilot scale demonstrations in FY 1996. Coordinated with Robotics Program to further define requirements of sorting, handling, and feed preparation.	Complete the pilot level demonstration of "Vitrify to Dispose" effort using non-radioactive mixed waste. Complete bench scale examination of metal loading compositional limits for vitrification and initiate pilot scale demonstration using radioactive mixed waste. Complete the evaluation of data requirements contained in the regulations and capabilities of technologies to meet final form requirements. Assess the benefits of enhanced waste forms. Initiate radioactive mixed waste testing of compact vitrification system.	Complete compact vitrification system demonstration on actual mixed waste stream integrating melter, off-gas system, front- and back-end materials handling, and on-line glass composition control. (This activity is also applicable to the Tank Focus Area).
			$ 4,658
	Improved microwave and polymer solidification technologies as applied to DOE waste streams. Conducted evaluation to ensure quality of initial waste forms for initial waste streams. Evaluated technologies to complete microwave system and systems integration issues. Conducted bench and pilot scale studies of debris polymer solidification. Transferred information to the Office of Waste Management while providing national coordination and integration of development activities.	Support the Office of Waste Management preparations for implementation of microwave and polymer solidification. Conduct additional studies to resolve systems and integration issues. Continue studies on solidification of additional waste streams and final waste form evaluation. Pursue scale up of debris solidification technologies and evaluate technical and regulatory acceptability of final waste forms.	Continue to transfer microwave and polymer solidification technology development activities to the Office of Waste Management. Demonstrate solidification on actual waste streams to meet site compliance agreements. Conduct tests on front-end handling and off-gas treatment systems. Assist in scale up for additional waste streams.
			$ 4,378
			$ 9,036

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III. Treatment and Remediation Technology Systems (Cont'd):
Mixed Waste Focus Area (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
FAC-DOIT	Funded in Technology Development Industry Program in FY 1994.	Funded in Technology Development Industry Program in FY 1995.	The objective of the Federal Advisory Committee to Develop On-Site Innovative Technologies program is to negotiate reciprocity of acceptance and regulatory approval of newly developed technologies between states, via participation of several Federal agencies, commercial entities, and the Western Governors Association. Facilitate emplacement of newly developed technologies into one or more compliance agreement at Federal sites. Transfer three technologies from one site to another, reducing the permitting lead time by fifty percent. Retrain and place twenty-five percent of the workforce at five Federal sites.
			$ 15,000
Capital Equipment	Key equipment requirements included: purchase of high temperature plasma melter and compact Joule-heated vitrification unit.	Key equipment requirements include: purchase of x-ray detection system, including tube source, glove box, and diode array spectrometer for non-metal detection; purchase of pilot-scale supercritical water reactor system; purchase of offgas treatment system, purchase of a high temperature vitrification unit to address treatment of plutonium and transuranic waste streams; purchase of a new thermal unit for the compact Joule-heated vitrification system; and purchase of improved torch power supply and the high temperature plasma melter.	Key equipment requirements will include: purchase of an integrated computer system for control and data analysis and storage for the x-ray detection system; and purchase of a pilot scale plasma hearth furnace.
	$ 5,460	$ 1,633	$ 3,141
Subtotal, Mixed Waste Focus Area	$ 56,457	$ 33,660	$ 60,900

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III. Treatment and Remediation Technology Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Radioactive Tank Waste Remediation			
Tank Integrity and Waste Analysis	Initiated full-scale demonstrations of hot cell and in-situ laser fiber-optic sensors to characterize tank waste and surrounding soils.	Complete hot cell characterization system and transfer to the Office of Waste Management user. Initiate transfer of hot cell system for in-tank deployment. Complete characterization field support systems trailer for in-tank deployment system (Light Duty, Utility Arm, or LDUA). Complete cold test of in-tank deployment system for characterization and tank surveillance end effectors.	Demonstrate real-time tank integrity inspection and waste mapping technologies in actual tank with radioactive waste. Demonstrate selected waste sample retrieval for characterization. Demonstrate sensors for simultaneous characterization of multiple waste constituents (ferrocyanides, nitrates, nitrites, and organics) in a hot cell on actual waste.
	$ 16,930	$ 17,463	$ 8,000
Tank Waste Retrieval	Conducted full-scale retrieval systems development with emphasis on advanced end effectors to support the Office of Waste Management in retrieval of tank waste at Hanford and other sites.	Conduct full-scale hydraulic testing of advanced end effectors for dislodging and conveying waste. Deliver procurement specifications for hydraulic end effectors to support robotic retrieval. Complete design of hydraulic end effectors for light duty retrieval demonstrations.	Conduct cold demonstration of dislodging and conveyance tools for retrieval of multiple waste types (supernate, sludge, saltcake). Demonstrate low pressure waterjet tools for waste removal from waste tanks. Demonstrate in-tank equipment designed to remove scrapped hardware from waste tanks.
			$ 7,800

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III. Treatment and Remediation Technology Systems (Cont'd):
Radioactive Tank Waste Remediation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Tank Waste Separations and Treatment	Conducted testing of selected separation technologies such as ion exchange, selective leaching, dissolution, nitrate and organic destruction on actual tank waste. Addressed processing of most difficult tank waste. Investment in this area produced potentially significant cost reductions in tank waste processing and disposal costs. This was achieved primarily by effecting volume reductions in subsequent processes (i.e. vitrification).	Conduct testing of selected separation technologies such as ion exchange, selective leaching, dissolution, nitrate and organic destruction on actual tank waste. Test and evaluate cesium removal on radioactive waste. Initiate sludge separations demonstration. Evaluate use of the compact processing unit (CPU) for cesium removal at Savannah River. Define CPU for organic nitrate and sludge waste streams.	Demonstrate mobile evaporator/concentrator for out-of-tank evaporation to minimize liquid waste volume in tanks. Conduct cesium removal pilot demonstration on tank waste, and test cesium removing sorbents for improved performance over baseline technology. Conduct radioactive demonstration of solid/liquid separation using cross flow filtration system. Demonstrate comprehensive sludge and supernate processing in a hot cell on radioactive waste. $ 8,300
Tank Waste Containment	Evaluated barrier options funded by others. Development of the permanent barrier was considered a key technology option in achieving tank closure. Additional investment in this area enhanced the technology and potentially reduced costs by expediting regulatory acceptance and reducing long-term monitoring requirements.	(Barrier activities applicable to tanks are described in the Plume Focus Area).	(Barrier activites applicable to tanks are described in the Plume Focus Area). $ 0
Tank LLW-Forms	Completed enhanced encapsulation testing and demonstrations. Additional investment in low-level waste waste form improvements resulted in potentially significant cost reductions in processing and disposal costs.	Initiate glass and ceramic waste form pilot testing. (Nitrate to ammonia and ceramic (NAC) process).	Demonstrate the nitrate to ammonia and ceramic (NAC) process. (Other vitrification activities applicable to tanks are described in the Mixed Waste Focus Area). $ 1,000

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III. Treatment and Remediation Technology Systems (Cont'd):
Radioactive Tank Waste Remediation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Key equipment requirements for the Tank Waste Focus group included: retrieval/characterization equipment, advanced pre-treatment demonstration test equipment, additional data acquisition sensors for underground storage tanks; and equipment that support final waste forms in addition to glass, separations and LLW processing.	Key equipment requirements for the Tank Waste Focus group include: physical characterization and hot testing apparatus and additional sensors for underground storage tanks; analytical equipment for measurement of radionuclides and lab-scale mock-up of process equipment for testing separations technologies; hydraulic test bed facilities; in-tank deployment system, including light duty robotic arm, inspection hardware, decontamination equipment and data acquisition apparatus.	Key equipment requirements for the Tank Waste Focus group include: equipment to demonstrate the ability to retrieve and treat liquid tank waste and to support the demonstration of tank-integrity inspection and waste mapping demonstration; equipment for sample retrieval and in-situ waste analysis; field deployable tools to remove scrapped hardware and multiple waste types; hot cell equipment for solid/liquid separations and sludge processing technologies; and hardware for pilot demonstrations of cesium removal and mobile evaporator/concentrator technologies.
	$ 6,555	$ 5,110	$ 3,400
Subtotal, Radioactive Tank Waste Remediation	$ 23,485	$ 22,573	$ 28,500
Contaminant Plume Containment and Remediation			
Containment of Plume: Reactive and Deep Subsurface Barriers	Continued advanced development of frozen soil barriers in arid and non-arid soil, for use as temporary barriers around treatment zones, underground tanks, etc. Continued engineering development of seven and demonstrated six technologies for improved subsurface access for characterization and remediation of less-complex soils. Continued engineering development of five permeable barrier concepts for containing groundwater contaminants to avoid poor performance and high costs of pumping and treating.	Complete advanced development of frozen soil barrier in a non-arid environment. Initiate full-scale demonstration at arid sites, if warranted. Complete engineering development of three and demonstrate six improved subsurface access technologies for more difficult soil conditions. Complete engineering development and demonstrate permeable, reactive treatment barriers to selectively contain and degrade or immobilize contaminants while allowing groundwater to move through the barrier.	Complete arid frozen soil barrier demonstration. Begin engineering development of additional temporary barriers as appropriate. Demonstrate up to three reactive barrier technologies and transfer up to three improved subsurface access technologies for difficult soil conditions. Demonstrate deep subsurface barriers and reactive barriers for contaminants, which may include strontium, cesium, technecium, and tricloroethylene (TCE) at depths up to fifty feet. Investigate technologies to extract contaminants or replace reactive

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III. Treatment and Remediation Technology Systems (Cont'd):
Contaminant Plume Containment and Remediation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Containment of Plume: Reactive and Deep Subsurface Barriers (Cont'd)			materials to prolong barrier life. Continue engineering development of performance monitoring techniques for reactive barriers. Demonstrate barrier emplacement tools to create an integrated barrier(s)/floor wall. (At least three of these barriers are applicable to the Tank Focus Area).
	$ 45,234	$ 42,846	$ 17,900
Remediation of Plume in the Groundwater: Metals, Radionuclides, and DNAPLs	Initiated exploratory evaluation of technologies for resource recovery from waste streams and for removal and treatment of denap, non-aqueous phase liquids (DNAPLs) in low permeability soils. Completed the demonstration of technologies for the characterization of Volatile Organic Compounds (VOCs) in soils. This included the evaluation of the cone penetrometer for the deployment of innovative sensors for real-time monitoring, in situ measurement of VOCs in soils, and field deployable vapor monitors.	Begin engineering development and demonstrate technologies for in situ separation/removal of radionuclides and heavy metals from contaminated groundwater, such as magnetic separation. Initiate engineering development of six technologies for the detection and location of DNAPLs and metal plumes in aquifers. Conduct applied research on four physical and chemical treatment methods for removing and treating DNAPLs from fine-grained, low permeability soils, or for in-situ destruction. Conduct applied research at Tulane and Xavier Universities for new performance parameters to be used in contaminant fate and transport models through ecological impact studies.	Continue engineering development of up to eight and demonstrate up to six improved technologies for detecting, immobilizing, destroying, or removing metals, radionuclides, DNAPLs and associated co-contaminants in groundwater. Such strategies as in-situ redox manipulation for immobilization of uranium; cone penetrometer tools, e.g., mobile laser spectroscopy for metals in groundwater; and soil heating and aerobic/anaerobic bioremediation for DNAPLs may be pursued.
			$ 26,015

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III. Treatment and Remediation Technology Systems (Cont'd):
Contaminant Plume Containment and Remediation (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Remediation of Plumes in Soils: Metals Radionuclides, DNAPLs	Initiated demonstrations for the removal of VOCs from the vadose zone and VOC destruction in off-gas minimizing secondary waste.	No Activity	No Activity.
	Performed engineering development of technologies for the removal of metals from soils. This included membrane separation systems, electrokinetics, and heap leaching. Initiated demonstration of the Supported Liquid Membrane technology for co-contaminant treatment. Performed engineering development of the in-situ MAG*SEP process and perform site preparations for demonstration.	Demonstrate two technologies for effective off-gas destruction of VOCs. Develop four and demonstrate two technologies for removal of metals and radionuclides from soil such as electrokinetics, plant uptake and membrane separation systems.	Continue engineering development of four and demonstrate up to seven improved technologies for detecting, immobilizing, destroying, or removing metals, radionuclides, and DNAPLs in soils. Such strategies as chromium VI immobilization using gas phase reducing agents, DNAPL destruction in-situ using chemical oxidation, and barometric pumping may be pursued. Continue engineering development to reduce secondary waste.
			$ 8,000
Capital Equipment	Key equipment requirements included: field analytical equipment and real-time contaminant monitoring equipment for conducting contaminant remediation research, development, and demonstration in compliance with Federal Facility Compliance Agreements (FFCAs) and Consent Orders.	Key equipment requirements include: field analytical equipment and real-time contaminant monitoring equipment for conducting contaminant remediation research, development, and demonstration in compliance with FFCAs and Consent Orders at DOE sites.	Key equipment requirements include: field analytical equipment and real-time monitoring equipment for conducting contaminant remediation research, development, and demonstration in compliance with FFCAs and Consent Orders at DOE sites.
	$ 2,896	$ 3,390	$ 2,185
Subtotal, Contaminant Plume Containment and Remediation	$ 48,130	$ 46,236	$ 54,100

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III. Treatment and Remediation Technology Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Landfill Stabilization			
Containment and In-Situ Stabilization of Landfill Buried Waste	Continued advanced development of enhanced corrosion resistant grouting materials for impermeable subsurface containment systems to contain contaminants at the buried waste source. Continued engineering development and demonstration of two techniques for subsurface containment systems emplacement. Completed design of advanced landfill covers for arid sites to control contaminant migration from the buried waste source and moisture influx from the landfill surface to waste seam. Continued engineering development of two long-term monitoring techniques to verify the integrity and performance of emplaced containment systems.	Continue advanced development of impermeable subsurface grouting materials and emplacement techniques to support a containment system field scale demonstration. Conduct field scale demonstrations of two advanced landfill covers for arid sites. Field demonstrate two long-term monitoring techniques to verify the integrity and performance of emplaced containment systems.	Complete field scale demonstrations of up to three impermeable subsurface containment systems for interim containment to prevent/reduce contaminant migration pending future remedial decisions and actions. Demonstrate up to three impermeable subsurface containment materials and emplacement techniques for long-term containment for use as a final remediation action. Continue field scale demonstrations of three advanced landfill covers for arid sites. Field demonstrate three long-term monitoring techniques to verify the integrity and performance of emplaced containment systems.
			$ 10,300
	Demonstrated an innovative application of buried waste grouting for in situ stabilization and to minimize the potential spread of contamination during retrieval operations. Demonstrated at full scale monolithic confinement to stabilize and contain source terms from landfills situated above basalts.	Conduct a field scale demonstration of buried waste encapsulation techniques using natural analog solidification agents for in situ stabilization. Conduct a field scale demonstration of in situ buried waste treatment techniques to destroy volatile organics while producing a stabilized waste matrix.	Continue field scale demonstrations of up to two in situ buried waste encapsulation and treatment techniques for in situ stabilization. Initiate engineering development and demonstration of up to one long-term monitoring technique to verify the integrity and performance of stabilization systems or stabilized materials.
			$ 3,000
	$ 29,561	$ 35,532	$ 13,300

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III. Treatment and Remediation Technology Systems (Cont'd):
Landfill Stabilization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Safe Removal and Processing of Landfill Buried Waste for Disposal	Conducted engineering development and performance demonstrations of eight technologies for the removal of transuranic (TRU) contaminated waste burial sites in support of the compliance agreements in place at the Idaho National Engineering Laboratory (INEL) with legally enforceable milestones.	Conduct a full scale integrated field systems demonstration of nine technologies to characterize, stabilize, control contamination, and remotely remove buried waste from a simulated waste pit.	Conduct a full scale integrated field systems demonstration at actual landfills consisting of up to six remote retrieval, characterization, and contamination control technologies to remediate pits and trenches containing TRU and mixed wastes. $ 6,400
	Completed a pilot scale demonstration at Fernald of the Minimum Addicive Waste Stabilization (MAWS) approach to vitrification which utilizes waste streams as substitutes for the necessary stabilization additives to produce a stable, high quality waste form and minimize waste volume for disposal.	Initiate bench scale testing of selected technologies for the MAWS approach to develop initial performance data and specifications for a pilot scale demonstration at a western site under the auspices of the Western Governors Association.	Complete the MAWS approach bench scale demonstration and initiate design and procurement of a pilot scale system for demonstration at a western site centered on vitrification of multiple landfill waste streams. $ 2,700
	Completed a pilot scale demonstration of sodium carbonate extraction for the decontamination of uranium contaminated soils at Fernald. The process has been incorporated into the Fernald Operable Unit 5 (OU-5) draft Feasibility Study. Initiated engineering development of a secondary waste treatment technology.	Demonstrate five pilot scale chemical/biological and physical separation techniques for ex situ treatment of uranium contaminated soils. Complete engineering development and demonstration of a secondary waste treatment technology.	Demonstrate up to four full scale chemical/biological and/or physical separation systems for ex situ treatment of uranium contaminated soils in landfills. Initiate engineering development of one ex situ soils treatment technology for mercury removal. $ 6,844

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III. Treatment and Remediation Technology Systems (Cont'd):
Landfill Stabilization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Safe Removal and Processing of Landfill Buried Waste for Disposal (Cont'd)	Continued engineering development and demonstration of three thermal treatment systems for the ex situ treatment of hazardous, radioactive, and mixed waste associated with metals, soils, conbustibles, and sludges. Continued engineering development of three supporting technologies for advanced process diagnostics, off-gas treatment, and thermal treatment systems modeling.	Conduct a pilot scale demonstration of the DC graphite arc furnace and advanced process diagnostics. Conduct engineering development and demonstration of three supporting technologies for off-gas treatment, radioactive waste correlation with surrogates, and thermal treatment systems modeling.	Conduct a bench scale thermal treatment demonstration using actual wastes with emphasis on process diagnostics, chemistries, and off-gas treatment. $ 3,300
Site/Waste Assessment for Landfill Buried Waste	Continued engineering development and demonstration technologies for the non-intrusive and/or intrusive characterization of specific landfill waste types, waste distribution, landfill boundary definition, and long-term monitoring. Developed and demonstrated six site characterization technologies and five waste assay technologies.	Demonstrate two technologies for site assessment to support landfill remediation operations. Demonstrate five technologies for waste assay to support excavated waste handling and processing operations.	$ 19,244 Conduct a demonstration of an integrated waste assay system consisting of five technologies using actual containerized TRU waste.
Capital Equipment	Key equipment requirements included: field analytical, geophysical, and real-time monitoring equipment for conducting landfill remediation research, development, and demonstrations in compliance with Federal Facility Compliance Agreement's (FFCA's) and Consent Orders at DOE sites; landfill containment systems equipment; in situ soils and buried waste stabilization systems equipment; remote waste retrieval systems equipment; ex situ soils and buried waste treatment systems equipment and	Key equipment requirements include: field analytical, geophysical, and real-time monitoring equipment for conducting landfill remediation research, development, and demonstrations in compliance with Federal Facility Compliance Agreement's (FFCA's) and Consent Orders at DOE sites; landfill containment systems equipment; in situ soils and buried waste stabilization systems equipment; remote waste retrieval systems equipment; ex situ soils and buried waste treatment systems equipment and	$ 4,700 Key equipment requirements include: field analytical, geophysical, and real-time monitoring equipment for conducting landfill remediation research, development, and demonstrations in compliance with Federal Facility Compliance Agreement's (FFCA's) and Consent Orders at DOE sites; landfill containment systems equipment; in-situ buried waste stabilization systems equipment; remote waste retrieval systems equipment; ex-situ buried waste treatment systems equipment and diagnostics

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III. Treatment and Remediation Technology Systems (Cont'd):
Landfill Stabilization (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	diagnostics intrumentation; and site characterization and waste assay equipment.	diagnostics intrumentation; and site characterization and waste assay equipment.	intrumentation; and site characterization and waste assay equipment.
	$ 4,392	$ 3,774	$ 5,256
Subtotal, Landfill Stabilization	$ 33,953	$ 39,306	$ 42,500
Facility Transitioning, Decommissioning and Final Disposition			
Facility Decommissioning and Dispositing Deactivation	No Activity.	Demonstrate four stabilization processes in the laboratory (liquid handling, liquid concentration, glovebox size reduction, glovebox disposition) and prepare performance specifications for one (spent fuel pools).	Demonstrate four stabilization processes in the field (liquid handling, liquid concentration, glovebox size reduction, glovebox disposition) and one in the laboratory (spend fuel pools).
			$ 5,200
Facility Decontamination	Demonstrated one improved concrete decontamination process in the field (electro-osmosis) and one in the field (microwave scabbling). Demonstrated one improved metal decontamination process in the laboratory (stainless steel refining) and prepared performance specifications for one (nickel refining).	Demonstrate one improved concrete decontamination process in the field (microwave scabbling) and two in the laboratory (electro-kinetic extraction, wall scabbling). Demonstrate two improved metal decontamination process in the field (stainless steel refining, gas phase cleaning), two in the laboratory (nickel refining, liquid flushing), and prepare performance specifications for two (cold hearth process, cryogenic cleaning).	Demonstrate two improved concrete decontamination processes in the field (electro-kinetic extraction, wall scabbling) and one in the laboratory (chemical extraction). Demonstrate two improved metal dismantlement processes in the field (nickel refining, liquid flushing) and two in the laboratory (cold hearth process, cryogenic cleaning).
			$ 3,200

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III. Treatment and Remediation Technology Systems (Cont'd):
Facility Transitioning, Decommissioning and Final Disposition (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Facility Dismantlement and Disposition	Prepared performance specifications for one dismantlement delivery system (telescopic boom). Prepared performance specifications for one material disposition process (in place asbestos stabilization).	Demonstrate one improved dismantlement delivery system in the laboratory (telescopic boom) and prepare performance specifications for six (mobile vehicle, overhead crane, cutting end effectors, gripping end effectors, laser cutting end effector, concrete cutting end effector). Demonstrate one material disposition process in the field (stainless steel waste containers), and two in the laboratory (in place asbestos immobilization, at landfill asbestos immobilization).	Demonstrate one improved dismantlement delivery system in the field (telescopic boom) and six in the laboratory (mobile vehicle, overhead crane, cutting end effectors, gripping end effectors, laser cutting end effector, concrete cutting end effector). Prepare performance specifications for one (depleted uranium conversion).
			$ 8,235
Capital Equipment	Provided for capital equipment procurements in support of Decontamination and Decommissioning of Facilities Integrated Demonstration. Equipment was required for advancing concrete decontamination of floors using microwave thermal technology and remotely operated equipment. This technology will result in a significant reduction in worker exposure since the present methods are highly labor intensive and produced a major reduction in the amount of dust generated during the process.	Provide for capital equipment procurements in support of Facility Transitioning, Decommissioning, and Final Disposition Focus Area. Equipment is required for the field testing and evaluation of new technologies for facility deactivation, decontamination, and dismantlement. Examples of equipment required are: equipment for both surface and bulk contaminated concrete; portable equipment for removing and stabilizing plutonium solutions from shut down processing equipment; testing equipment to support gas phase decontamination demonstration; liquid nitrogen/carbon dioxide blasting equipment; equipment for cutting, disassembly, and dismantlement of reactors, heavy equipment, and concrete/metal structures.	Provide for capital equipment procurements in support of Facility Transitioning, Decommissioning, and Final Disposition Focus Area. Equipment is required for the field testing and evaluation of new technologies for facility deactivation, decontamination, and dismantlement. Examples of this equipment are: equipment for both surface and bulk contaminated concrete; dismantlement/decontamination of plutonium contaminated gloveboxes, equipment for decontamination of spent fuel storage pools; equipment for stabilizing and decontaminating large fuel reprocessing facilities; equipment for cutting, disassembly, and dismantlement; equipment for dismantlement of research reactors; deactivation of plutonium contaminated facilities.

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III. Treatment and Remediation Technology Systems (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	$ 200	$ 1,150	$ 1,165
Subtotal, Facility Transitioning, Decommissioning and Final Disposition	$ 4,514	$ 15,943	$ 17,800
Treatment and Remediation Technology Systems	$ 166,539	$ 157,718	$ 203,800

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Innovative & Crosscutting Technology Program

In order to efficiently utilize all available resources, programs that support more than one Technology Focus Area are classified as crosscutting programs. The programs grouped into this category are Characterization, Monitoring and Sensor; Efficient Separations and Processing; Robotics; Innovative Technologies/Supporting Programs; and Pollution Prevention. This management structure allows the Office of Technology Development to provide the five Focus Areas with the best possible technologies and expertise for the research and development of the respective focus area's cleanup strategies. The crosscutting programs ensure that no technology research is duplicative between the problem areas thereby enabling the focus area management teams to leverage valuable development resources from each other.

A. Characterization, Monitoring and Sensor

The objective of the Characterization and Sensors Cross-cutting Program is to develop sensors, sensor platforms and characterization methodologies to address five major problem areas facing the Office of Environmental Management, namely, underground storage tanks, mixed waste, landfills (and surface soils), contaminant plumes, and decontamination of facilities. Specific characterization problems at DOE sites include: approximately 3,700 contaminated sites, 1.5 million barrels of stored waste, 385,000 cubic meters of high level waste in tanks and between 1,700 and 7,000 facilities (prior to, during, and post-D&D). The systems integration of advanced characterization technologies within a common sense approach (method) can save DOE billions of dollars over baseline approaches. For example, in the Landfill and Plume areas, this program has funded the development of an Expedited Site Characterization method that does not rely upon any single technology but relies upon utilizing multiple, synergistic, site-specific techniques. It has demonstrated large cost reductions for site characterization field work at several Federal contaminated sites (e.g., DOE, DOI, USDA, and DOD). In addition to funding projects from applied research and development to full-scale (pilot) demonstrations, this program funds development of analytical methods, EPA protocols, market assessments, commercialization action plans, and workshops to facilitate technology transfer, communications and wide-spread implementation. Performance measures for FY 1996 include: the demonstration of eleven improved detector/characterization technologies, complete technology transfer of four technologies to a site user and a cost savings through technology implementation of over $100 million. Technologies to be demonstrated before the end of FY 1996 include: 3D/3C reflection seismic imaging, multispectral neutron borehole logging, laser induced fluorescence, laser induced breakdown spectroscopy, miniature geophysical and photogrammetric sensor packages for remotely piloted vehicles, the Expedite Site Characterization Method at several DOE sites, data fusion and several sensors/sampling devices for the cone penetrometer.

B. Efficient Separations and Processing

The objective of the Efficient Separations and Processing crosscutting program is to identify, develop, and perfect separations technologies and processes to treat radioactive wastes and address environmental problems throughout the DOE complex. A variety of waste and environmental problems exist at more than one-hundred contaminated installations in 36 States and territories. Treatment of these DOE defense wastes using separation methods to concentrate contaminants and purify waste streams will drastically reduce cleanup costs. Separations will result in a lower volume of waste to be stored in a deep geologic repository, reduction in secondary waste volumes, conversion of the waste into acceptable stable waste forms for storage and disposal, lower remediation costs and improved environmental quality of terminal high- and low-level wastes.

This crosscutting program conducts research to develop new chemical separations technologies and processes which support all of the five technology focus areas. This occurs in five major technical areas including: novel ion exchange materials, advanced solvent extraction, waste solids treatment, selective sorbents/ligands and other separations areas. The program sponsors research and development on a) improved physiochemical processes; b) processes that enhance chemical separations or eliminate a separations step by destroying a contaminant; c) adapting efficient technologies developed for a specific application to meet other focus area and cleanup needs within the DOE complex; and d) separations

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issues common to all focus areas, such as recycle of process reagents, treatment of wash liquids, and cycle closing technologies. Finally, when parallel efforts are being pursued within EM, the Efficient Separations and Processing program coordinates all of these separations activities.

In FY 1996 the Efficient Separations and Processing crosscutting program will complete development of at least nine technologies. Examples include cesium/strontium removal, technetium removal, vacuum distillation treatment of plutonium residues at Rocky Flats, sludge treatment to determine feasibility of the approach assumed in the Hanford Tri-Party Agreement milestones, electrochemical destruction of nitrate/nitrite, tritium remediation, and calcination/dissolution for volume reduction of tank waste.

C. Robotics

The Robotics Technology Development Program focuses on technologies to replace humans at risk with robotic systems where justified by safety, cost, and/or efficiency arguments. The goal of the robotics program is to apply the best talent from DOE National Laboratories, including industries and universities to solve complex-wide problems while involving the customers in the identification and development of needs driven technologies. The program will develop and integrate systems focused on the automation of the following: analytical chemistry procedures; handling/processing of mixed waste; retrieval/characterization of storage tank wastes; and, surveillance, characterization, cleanup, and decommissioning of retired facilities. In FY 1996, the Robotics Technology Development program will demonstrate seven technologies/systems: automated front-end and back-end materials handling for mixed waste treatment; automated inspection of stored drums; fully functional tank waste retrieval test bed; cooperative arms module for multi-application; automated analysis of organics and metals; autonomous mapping of chemical and radiological contamination on inside surfaces of buildings.

D. Innovative Technologies

Innovative Technologies/Supporting Programs focus on technological breakthroughs which offer long-term high risk, high-payoff for EM technology development. The program's goal is to jointly sponsor and coordinate with the research and development programs of other DOE and Federal agencies thereby leveraging inter- and intra-departmental resources in the identification and support of technologies which show promise in addressing specific EM needs, but require proof of principle experimentation. The program will develop solutions that require refinements and/or enhancements of basic knowledge in current sciences, technologies, methods, and techniques applicable to mixed waste, high-level waste tanks, contaminated plumes, decontamination and decommissioning, efficient separations, characterization and sensors, and robotics.

E. Pollution Prevention

Pollution Prevention technology development activities are directed at reducing the generation of hazardous and/or radioactive waste and on the recovery, recycle, and reuse of materials. The general objectives of the DOE/Air Force Memorandum of Understanding (MOU) program involve exchanging information with the United States Air Force (USAF) and jointly pursuing demonstrations that will benefit both agencies resulting in reductions in cost and time for implementation of pollution prevention/waste minimization approach. The DOE and USAF have combined resources to facilitate technology solutions aimed at reducing or eliminating waste through process change or in-process remediations. Specifically, the demonstrations will address alternative cleaning processes, solvent substitution, metal manufacturing, and recycling technologies. The key benefits are reductions in demonstration costs and time through shared sponsorship, exchange of information, and the incorporation of the USAF research experience into the DOE complex.

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II. A. Summary Table: Innovative & Crosscutting Program

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Characterization, Monitoring, and Sensor . . .	$ 25,097	$ 26,125	$ 26,200
Efficient Separations and Processing	13,327	16,484	17,700
Robotics	21,403	22,390	23,600
Innovative Technologies	20,303	13,749	11,200
Pollution Prevention	1,374	1,681	1,500
Total, Innovative & Crosscutting Program	$ 81,504	$ 80,229	$ 80,200

II. B. Laboratory and Facility Funding Table: Innovative & Crosscutting Technology Program

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request
Albuquerque Operations Office	$ 849	$ 0	$ 0
Fernald Environmental Management Project	0	300	0
Grand Junction Project Office	1,005	437	0
Los Alamos National Laboratory	7,259	4,830	0
Sandia National Laboratories	10,021	8,903	0
Ames Lab	4,501	3,669	0
Argonne National Lab (East)	4,393	3,543	0
Brookhaven National Lab	300	350	0
Chicago Operations Office	3,500	4,861	0
Idaho Operations Office	5,112	3,456	0
Nevada Operations Office	3,140	2,030	0
Oak Ridge Operations Office	11,811	11,110	0
Pittsburgh Energy Technology Center	194	400	0
Pacific Northwest Lab	10,219	8,205	0
Richland Operations Office	1,325	594	0
Lawrence Berkeley Lab	965	1,309	0
Lawrence Livermore National Lab	2,568	1,670	0
Savannah River Site	4,015	3,731	0
All Other	10,327	20,831	80,200
Total, Innovative & Crosscutting Technology Program	$ 81,584	$ 80,229	$ 80,200

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Innovative & Crosscutting Technology Program			
Characterization, Monitoring, and Sensor Technology	Continued development of field-deployable sensors with successful demonstration of chemical, four geophysical and two radiation instruments. Continued development of cone penetrometer technologies with successful demonstration of three sensors, two sampling technologies, and a new tip design. Demonstrated the innovative Expedited Site Characterization (ESC) methodology at three DOE sites (Pantex, Marshalltown, and the St. Louis Airport site).	Continue development of field-deployable sensors with demonstrations of chemical and geophysical instruments. Final demonstration and tech transfer of the ESC methodology at the Savannah River Site. Development and demonstration of one cone penetrometer technologies. Continue development of miniaturized, robust chemical sensors for use in-situ for remediation and post-closure monitoring (e.g., Multianalyte fiber optics, Flow Probe, and sol gel indicator chemistry sensors).	Initiate development of sensors and techniques to monitor emplacement and integrity of subsurface barriers and performance of reactive barriers. Continue development of field-deployable and cone penetrometer sensors. Continue development of miniaturized chemical sensors with testing of at least two sensors. Minaturized and field deployable sensors for all contaminated crosscut "focus area" applications (e.g. Laser Induced Floresscence used to detect uranium on walls for D&D and on soil for Plumes and Landfill Focus Areas).
			$ 5,830
	Continued development of field-deployable chemical and radiation instruments for decontamination and decommissioning (D&D) of DOE facilities. Successfully demonstrated one chemical and one radiation instrument for rapidly surveying large areas of concrete and metal surfaces. Initiated analysis of all existing robotic platforms and sensors for integration for D&D applications.	Continue development of sensors for D&D with demonstration of one chemical and two radiation sensors. Completion of analysis for optimal sensors on robotic platforms for D&D. Develop and demonstrate two non-destructive analysis (NDA) technologies for locating contaminants in walls and pipes.	Continue development of sensors with testing of at least two sensors for specific D&D applications. Continue development of non-destructive analysis (NDA) technologies. Sensor technologies used for detection of contaminants in pipes can be applied to down hole contaminant detection for Plumes and Landfill Focus Areas.
			$ 2,220

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Characterization, Monitoring, and Sensor Technology (Cont'd)	Continued development of real-time emission monitors for waste treatment processes with successful demonstration and EPA acceptance of Fourier Transfer Infrared (FTIR) for incinerators.	Initiate development of chemical sensors and monitors for integration into the top three candidate mixed waste treatment processes for Mixed Waste Focus Area. Continue development of real-time airborne emissions monitors. Demonstrate 3 chemical sensors and one emission monitor. Continue development of several sensors and improved sampling technologies for mixed waste at the Diagnostic Instrument and Analysis Laboratory (DIAL) at the University of Mississippi.	Continue development and testing of continuous emission monitors for metals, organic, and inorganic species (e.g. laser induced breakdown spectroscopy-LIBS, fourier transfer infrared-FTIR, and mass spectrometry-MS). Continue development of advanced process monitors and controls for pilot scale plasma and vitrification treatment processes. Demonstrate expert system for plasma treatment control. $ 8,774
	Continued development of chemical and geophysical sensors and imaging technologies for characterization of high-level waste (HLW) from USTs for retrieval and treatment. Demonstrated two technologies. Continued development of monitors for ensuring safety of waste in USTs including monitors for toxic headspace gases, moisture in tank waste matrix and tank leakage. Demonstrated one leakage instrument and two moisture sensors.	Continue development of one chemical and three geophysical sensors and one imaging technology for characterization of high-level waste (HLW) from USTs for retrieval and treatment. Demonstrate two technologies. Continue development of monitors for ensuring safety of waste in USTs including monitors for toxic headspace gases, moisture in tank waste matrix, and tank leakage. Demonstrate one leakage instrument and two moisture sensors.	Test imaging (acoustic) technology and continue development of chemical monitors for characterization of high-level waste (HLW) from USTs for retrieval, pretreatment, and treatment processes. Continue development of process monitors for HLW vitrification and other projected treatment methods. Initiate development of sensors for HLW cone penetrometer and Light Duty Utility Arm. Initiate development of monitors for continuous, real-time detection of tank and transfer line leaks during waste retrieval operations. $ 7,400

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Characterization, Monitoring, and Sensor Technology (Cont'd)	Key equipment requirements included: field analytical equipment and real-time contaminant monitoring equipment for conducting contaminant remediation landfill stabilization, underground storage tanks, mixed waste, and D&D, research, development, and demonstration in compliance with Federal Facility Compliance Agreements (FFCAs), and Consent Orders. $ 1,557	Key equipment requirements are: field analytical equipment and real-time contaminant monitoring equipment for conducting contaminant remediation landfill stabilization, underground storage tanks, mixed waste, and D&D, research, development, and demonstration in compliance of Federal Facility Compliance Agreements (FFCAs), and Consent Orders at DOE sites. $ 1,950	Key equipment requirements will be: field analytical equipment and real-time contaminant monitoring equipment for conducting contaminant remediation landfill stabilization, underground storage tanks, mixed waste, and D&D, research, development, and testing in compliance of Federal Facility Compliance Agreements (FFCAs), and Consent Orders at DOE sites. $ 1,976
	$ 25,097	$ 26,125	$ 26,200
Efficient Separations and Processing	Continued development of four Cesium/Strontium (Cs/Sr) removal technologies from alkaline and acidic waste. Completed hot test of industrial technology for Cs/Sr removal on actual wastes at Idaho National Engineering Laboratory/Oak Ridge National Laboratory (INEL/ORNL). Completed and signed a Cooperative Research and Development Agreement (CRADA) for commercialization of silicotitanate material used in radioactive waste cleanup. Established technical exchange and sponsored US/Russian test of Russian technology for Cs/Sr removal at INEL.	Further development of Cs/Sr removal technologies from alkaline and acidic waste. Perform hot tests of industrial technologies for Cs/Sr removal on actual wastes at West Valley, ORNL, and other sites. Complete development and demonstration of silicotitanate engineered form used in radioactive waste cleanup. Continue international dialog and initiate further testing of Russian technologies on actual wastes at DOE sites.	Complete development of advanced Cs/Sr removal technologies from alkaline and acidic waste, evaluate and integrate separations pretreatment technologies to meet Low Level Waste (LLW) glass performance specifications, evaluate industrial technologies for application to other radionuclides, and to meet needs in Facility Transition and Mixed Waste Focus Areas. Test use of sorbents for in situ reactive barriers for Plume Focus Area. $ 3,000

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Efficient Separations and Processing (Cont'd)	Developed cooperative sludge preprocessing capability in coordination with Waste Management. Experimentally and thermodynamically evaluated sludge washing/leaching options to remove radionuclides and other harmful metals from sludges and tank wastes. Coordinated a sludge chemistry program with Tank Waste Remediation System (TWRS) to develop models, baselines, and alternative sludge treatment technologies. Continued development of technology for treating Rocky Flats plutonium-bearing residues.	Extend work on sludge treatment technologies, including testing on actual wastes. Continue coordination with Waste Management's TWRS program and work on ORNL waste. Survey results over a range of actual waste compositions to provide input for treatment of dissolved sludges. Continue development of technology for treating Rocky Flats plutonium-bearing residues.	Continue work on baseline sludge treatment for Hanford and Oak Ridge and develop alternative sludge pretreatment technologies to ensure minimization of High Level Waste (HLW) volume. Evaluate technologies for use on INEL calcine, mixed waste (MW) sludges, and pond sludges. Initiate work on separation and treatment of radioactive sludges in cooling ponds. Focus on highly selective leaching of target species from sludge. Complete development of technology for treating Rocky Flats Pu-bearing residues.
			$ 7,900
	Continued highly selective complexant development for treating aqueous solutions containing Transuranics (TRUs) and technetium. Began evaluation of separations methods developed for HLW for treating mixed wastes, soils, groundwater, and toxic wastes. Assessed viability of extending technologies developed for HLW to contaminated soil and groundwater cleanup. Began development of tritium removal technologies.	Continue development of highly selective complexants for treatment of aqueous solutions. Extend new processing technologies developed for other waste streams to D&D, process wastewaters, groundwaters, etc. Assess needs for contaminant recovery from decontamination fluids and reagent recycle. Demonstrate tritium removal technologies for cooling pool water and evaluate feasibility for cleanup of groundwater. Start research on stabilization of actinides in soils and recovery and sorption of technetium from groundwater.	Complete R&D on highly selective complexants for treatment of TRU-contaminated waters. Evaluate separation needs and initiate R&D for recycle of wash liquids and process chemicals in treatment of D&D wastestreams, landfill wastes, and soils. Continue research on stabilization of actinides in soils and recovery and sorption of technetium from groundwater. Develop technologies to remove technetium and TRUs from tank wastes to meet LLW requirements.
			$ 3,900

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Efficient Separations and Processing (Cont'd)	Began development of separations technologies for extraction of heavy metals from HLW and LLW to stabilize HLW forms and meet projected environmental restrictions. Evaluated new processes for destruction and/or separation of organic species in HLW needed for safety, Resource Conservation and Recovery Act (RCRA) and process effectiveness. Continued electrochemical destruction work and began work on new process to extract nitrates and recycle nitric acid from LLW.	Continue development of technologies for heavy metal extraction and destruction of organics and nitrates. Begin development of technologies for the removal of mercury from mixed waste streams to simplify subsequent processing. Assess needs for removal of other nonradioactive contaminents from radioactive wastestreams.	Complete development of electrochemical technology for nitrate and organic destructions. Evaluate application to all focus areas. Continue development of technologies to remove heavy metals from aqueous wastes and contaminated wastes. Continue work on mercury removal and initiate work on other volatile species for Mixed Waste Focus Area.
			$ 1,700
	Key equipment requirements included: equipment to further develop gloveboxes, analytical instrumentation, extraction, and electrodialysis equipment for use in the gloveboxes, real-time characterization equipment and equipment to construct in-lab test units to facilitate proper R&D of technologies developed under the ESP program in accordance with the identified needs of the focus areas in compliance with the Federal Facilities Compliance Agreements (FFCAs), consent orders, and applicable DOE orders.	Key equipment requirements are: equipment to develop a solvent extraction testing system and a membrane testing system and chemical instrumentation for laboratory testing in order to facilitate proper R&D of technologies developed under the ESP program in accordance with the identified needs of the focus areas in compliance with the Federal Facilities Compliance Agreements (FFCAs), consent orders, and applicable DOE orders.	Key equipment requirements will be: laboratory analytical equipment and equipment to construct laboratory testing systems to further develop and test technologies in order to facilitate proper R&D of technologies developed under the ESP program in accordance with the identified needs of the focus areas in compliance with the Federal Facility Compliance Agreements (FFCAs), consent orders and applicable DOE orders.
	$ 550	$ 1,700	$ 1,200
	$ 13,327	$ 16,484	$ 17,700

III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Robotics	Completed technology transfer through Cooperative Research and Development Agreements (CRADAs) for in-tank mapping system and improved dynamic performance of telescoping tube waste. Completed modeling and analysis of ingress/egress options for tank waste retrieval test bed. Completed functional requirements for test bed and began procurement of major subsystems.	Complete modifications to the High Bay test facility in Richland, Washington for the tank waste retrieval test bed and procure remaining subsystems. Demonstrate damping of multi-plane oscillations in long-reach manipulators.	Develop a fully functional robotics system on full scale tank waste retrieval test bed. Deploy automated tools for mapping, positioning, control, and collision avoidance. Deploy enhanced version of modular, transportable, generic system controller applicable to all robotics projects.
			$ 6,400
	Finished lab testing and modification of digestion and filtration standard laboratory modules as part of contaminant analysis automation. Finished lab testing and modification of concentration and solvent recovery standard laboratory modules and EPA validation of sample preparation module. Demonstrated mobile EPA method 3540/3550 standard analysis method.	Complete laboratory testing and modifications of standard laboratory modules (SLMs) for EPA methods. Validate Hot Plate, TCLP, Solvent Recovery, Radionuclide, and Alpha-counting SLMs. Initiate EPA validation for Data Interpretation Method for EPA 7000 and 8200. Complete development of new priority SLMs, including Zero Head Space Extraction and SFE SLMs. Finish integration and beta testing of the first EPA 3540/3550 SAM system. Begin integration of Digestion SAM for metals.	Demonstrate automated analytical chemistry modules for radionuclides, metals, organics, and inorganics.
			$ 2,300
	Demonstrated AC swing-free crane control. Demonstrated stored waste autonomous mobile inspector in simulated warehouse. Developed system for radiographic and material characterization and sorting of waste items. Demonstrated remote drum and liner opening.	Deliver, test, and transfer stored waste inspection system technology. Complete and demonstrate system for radiographic and material characterization of waste items. Begin materials handling development for mixed waste.	Develop systems for mixed waste materials handling to automatedly handle drums on the front-end of a mixed waste treatment process. Develop robotic systems for inventory inspection to automatedly inspect stored drums of mixed waste. Develop systems for post-treatment materials handling and demonstrate back-end materials handling system at a waste treatment facility.
			$ 4,400

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Robotics (Cont'd)	Developed surveillance and cost/benefit analysis method. Developed multi-purpose mobile robotics system for facility mapping, contaminant characterization, and inspection. Completed conceptual design of reconfigurable dual-arm work module portion of a mobile telerobotic system suitable for performing decontamination and dismantling functions. Developed small pipe characterization system. Developed internal duct characterization system.	Apply surveillance and cost/benefit analysis method to actual facility. Incorporate additional sensors and increase automation capability of mapping, characterization, and inspection system for large area operations. Demonstrate selective equipment removal vehicle with dual-arm manipulators. Complete small pipe characterization system development and transfer technology to industry. Enhance internal duct characterization system mobility for wider range of duct system requirements.	Develop dual-arm modular system for application in decontamination and dismantlement and tank waste retrieval operations. Develop mobile system to automatedly measure and record chemical and radiological contamination on internal surfaces (e.g., walls, hot cells) of buildings. Make cost/benefit analysis tools available for general use over interactive computer networks. Develop modular software and intelligent interface to support rapid configuration and implementation of multiple arm system.
			$ 5,900
	Completed sensors for control of robot manipulators and vehicles as well as integrated sensory arrays for characterization, in-situ, of hazardous waste sites (e.g., MiniLab, collision avoidance system). Developed graphical interfaces for contaminant mapping. Developed and integrated advanced robotics technologies for control of robotic systems (arms and vehicles) as well as software modules for the Generic Intelligent System Controller. Developed generalized approach to cost/benefit analyses for application to RTDP projects. Sponsored university R&D programs to initiate longer-term focused R&D in advanced technology areas. Determined hardware configuration and control algorithms for multi-robot to use dual bridge gantry crane with detachable arms. Completed assessment of commercial software for generalized modeling environment for use in analysis and evaluation of robotics technology concepts and remote network access of modeling capabilities.	Transfer Minilab hardware approach to commercial sector. Transfer collision avoidance technology to industry. Improve graphical interfaces for contaminant mapping. Provide automated tools for integrating software into the generic intelligent system controller library. Integrate cost/benefit analyses based upon full system simulation efforts to provide cost/benefit analyses based upon full system simulations. Sponsor university R&D programs to continue longer term focused R&D. Integrate computer and multi-arm control algorithms for broad use within the robotics program. Extend modeling and simulation capabilities and improve user interfaces to facilitate use. Prepare specific technologies for accelerated technology transfer and initiate technology transfer activities.	Advanced technology initives are conducted in FY 1996 in the Tank Waste Retrieval mixed waste operations and decontamination and dismantlement robotics technology activity areas.

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Robotics (Cont'd)	Provided equipment for mobile survey/characterization systems for D&D real-time work cell imaging and box/bin opening systems for mixed waste operations. Procured standard laboratory modules for acid digestion and radioanalysis. Completed acquisition of hardware for sensor assemblies, minilab, and joint/links for modular robotics.	Procure hydraulic actuator for cooperating multi-arm manipulator. Procure equipment for use in developing the interactive simulator demonstration. Procure equipment and assemble hardware and software standard laboratory modules for organics and metals test beds and organic mobile demonstration. Procure and modify commercially available analytical instruments for compatibility with the contaminant analysis automation architecture. Procure equipment to complete testing on stored waste autonomous mobile inspector. Procure equipment for swing-free crane and container transportation demonstration. Complete hardware modifications to high bay facility. Procure improved navigation system and battery changer for the mobile automated characterization system. Complete hardware acquisitions for selective equipment removal system operator interface and console, small pipe and internal duct characterization, and technology assessment facility.	Procure equipment for completion of hardware and testing of standard laboratory modules. Procure equipment to complete assembly and demonstration of selective equipment removal and mapping, inspection, and characterization systems. Complete acquisition of hardware for modifications to dual arm manipulator module and mobile vehicle platform. Procure equipment to complete front- and back-end materials handling systems.
	$ 4,500	$ 4,678	$ 4,600
	$ 21,403	$ 22,390	$ 23,600

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Innovative Technologies	Continued investigations into fate and transport of contaminants in soil and water, in-situ bioremediation, and detection and removal of heavy metals under a joint agreement with EPA's Hazardous Substance Research Centers. Initiated development of mass spectrometry, and continuous metal emissions monitors in support of the five focus areas. These activities are coordinated with efforts identified in CMST above. Completed the design of porphyrin bioreactor. Provided support for the development and operations of the Interagency Environmental Technology Office (IETO).	Modify the focus of the joint support of research and development with EPA's, HSRC, and SITE Programs to reflect the new priorities, goals, and objectives of the five focus areas. Initiate the development of joint efforts with other DOE Research and Development Program Offices that address solutions to environmental restoration and waste management. Continue support to the Interagency Environmental Technology Office (IETO). Complete funding for investigations and development of technologies that are to be transferred to CMST, Robotics, and Efficient Separations.	Complete the realignment of activities supported jointly with EPA, NSF, DoD, and other Federal agencies that address the development of environmental technologies. Continue to support joint activities with other DOE Research and Development Program Offices that address the higher-risk, high pay-off, longer-ranged basic, and applied research that can lead to break-throughs in cost, performance, and effectiveness of environmental technologies. Continue support of interagency coordinated efforts addressing research, development, demonstration, testing, and evaluation of environmental technologies.
			$ 5,520
	Provide support to the Small business Investment Program (SBIR) to address on-site remediation technologies, expedited waste characterization, low-level mixed waste processing, and chemical separation processes for waste treatment.	Continue support of the Small Business Investment Research (SBIR) Program addressing technology needs in the areas of characterization, monitoring, and sensor technologies for radioactive and hazardous waste; in-situ treatment of metal contaminated soils, and chemical separation processes for waste treatment.	Continue support of the Small BUsiness Investment Research (SBIR) Program focussing on needs identified by the five focus areas.
	$ 3,598	$ 4,400	$ 5,680
	$ 19,888	$ 13,749	$ 11,200
Capital Equipment	Purchased commercial instruments for capillary electrophoresis and electrospray mass spectrometry.	No activity.	No activity.
	$ 415	$ 0	$ 0

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III. Innovative & Crosscutting Technology Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Pollution Prevention	Fabricated pilot plant for spray casting process. Implemented spray casting technology. Demonstrated technology to detoxify and recover industrial acid. Integrated strategic planning process for DOE/DoD program. Demonstrated feasibility of Supercritical carbon dioxide (SC-CO2) technology for cleaning cloth laboratory wastes.	Perform verification and field testing of spray casting metal coating process. Technology transfer of metal coating process and pilot plant equipment. Transfer WADR acid recovery system to USAF-ALC. Develop a supercritical CO2 separator and scale-up system. Develop a waste tire bioreactor. Identify DOE pollution prevention/waste minimization needs and incorporate into the EM Technology Needs Matrix.	The waste tire bioreactor will be scaled-up to pilot-scale process. Process will be demonstrated with retreading and new tire manufacturers to reduce waste and recycle oil and other valuable byproducts. Using the EM Technology Needs Matrix, high priority pollution prevention/waste minimization technology needs will be identified and development of applicable technologies will be initiated.
	$ 1,374	$ 1,481	$ 1,500
Innovative & Crosscutting Technology Program	$ 81,504	$ 80,229	$ 80,200

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Industry Programs

The mission of these programs is twofold, one to engage the private sector to produce effective solutions for the five focus area needs and concurrently support the advancement of U.S. Industrial competitiveness. Secondly, to provide support to the Western Governors Association (WGA) to establish a cooperative effort for the development of technical solutions to Environmental Management (EM) problems shared by the Federal and private sector in the western States.

A. Industry Programs

The Technology Development (TD) Program is committed to ensuring that private industry and universities are major participants in developing and deploying technologies for Environmental Restoration and Waste Management. Projects in this area may include unique, high risk, high payoff research and devlopment as well as demonstration, testing, and evaluation of technologies that have been developed outside of the Department of Energy's (DOE's) management and operating contractor structure. Two basic approaches are engaged by Industry Programs in supporting efforts to private industry and universities: Program Research and Development Agreements (PRDAs) are used to solicit a broad mix of development, demonstration testing, and evaluation proposals; and Research Opportunity Announcements (ROAs) are used to solicit proposals primarily in applied research. In providing money directly to private technology developers and supporting the five focus area needs, TD ensures that DOE funds are leveraged with private sector resources and promising technology implementation is accelerated to fill identified technology gaps. The definition of technology needs to be addressed by this program, along with program planning, resource allocation, program and project management and evaluation is totally integrated with the five focus areas and crosscut program defined previously. The utilization of industry and university/industry partners as the lead entity for research, development, demonstration, testing, evaluation, and implementation brings a synergism to the process that affords opportunities for a more cost-effective process of technology development. This arrangement allows for not only the development of technologies, but the establishment of fully capable remediation teams that can implement the technology option across both Federal and private sites. This approach respresents an industry-oriented research and development model that nurtures developers towards a viable commerical product that has broad application to the EM mission as well as enhancing the overall competitiveness of the U.S. environmental industry.

B. Federal Advisory Committee to Develop On-Site Innovative Technologies

The objective of this activity is to continue providing financial assistance to the Western Governors Association (WGA) initiative in support of a Memorandum of Understanding (MOU) between DOE, Department of Defense (DoD), Department of the Interior (DOI), and the Environmental Protection Agency (EPA) to establish a more cooperative approach for the development of technical solutions to Environmental Management problems shared by the Federal and private sector in the western States, through the Federal Advisory Committee to Develop On-Site Innovative Technologies support working groups, roundtables, and workshops to share information of success in implementation of technologies and obtain recommendations and advice to facilitate stakeholder partnerships to expedite deployment and testing of innovative cleanup technologies.

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II. A. Summary Table: Industry Programs

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Industry Programs	$ 24,813	$ 42,700	$ 41,200
Federal Advisory Committee / Develop On-Site Innovative Technologies	1,500	500	0
Total, Technology Development Industry Programs	$ 26,313	$ 43,200	$ 41,200

II. B. Laboratory and Facility Funding Table: Industry Programs

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request
Morgantown Energy Technology Center	$ 26,313	$ 24,842	$ 0
All Other	0	18,358	41,200
Total, Industry Programs	$ 26,313	$ 43,200	$ 41,200

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Industry Programs			
Industry Programs	Designed, built, and field tested a field portable device for rapid analysis of total chlorinated hydrocarbons. Completed pilot-scale testing of the VAC*TRAX Vacuum/Thermal Treatment System for removal of volatiles and select semivolatiles from mixed waste surrogate materials and Rocky Flats contaminated soils. Completed most of the proof-of-concept and laboratory testing of a mass spectrometric instrument for gaseous and particulate characterization. Completed the bench-scale experiments to remove uranium and heavy metals from the Fernald and ARCL contaminated soils. Completed testing of the sub-systems of an inspection survey robot. Fabricated three different Platelet-Cooled Plasma Arc Torch designs. Completed design of a robotic tool to remove asbestos insulation from 4- to 8-inch diameter pipes. Completed development of a new telerobotic controller and evaluated the robot's performance in a mock-up DOE facility. Developed an electro-hydraulic technology for decontamination of concrete structures by scabbling the near-surface layer and demonstrated its ability to remove up to one inch of the concrete surface.	Initiate the formal integration of the activities of the Industry Programs into the five focus areas and crosscut programs. Assign program and project managers to the focus area management teams. Coordinate project implementation to directly support the goals, objectives, and priorities established to accomplish the targets for the five focus areas and the crosscutting programs. Modify the peer review process to enhance the participation of non-EM/SM supported peer reviewers. Formalize the process of project evaluation, selection, and oversight to be driven by focus area metrics. Major thrust areas in support of the five focus areas include the removal of volatiles and semivolatiles from surrogate materials for mixed waste. Development and demonstration of technologies for visual and non-destructive evaluation of the internal wall of waste storage tanks. Demonstration and testing of systems for sampling and identification of plumes. Complete the development and testing of sub-surface imaging technologies. Decontamination of concrete structures and development and testing of improved personal protective systems for hazardous waste workers.	Complete the integration of project activities of the Industry Programs into the five focus areas and crosscut programs. Implement competitive solicitation(s) to address specific needs identified through the focus area management approach and work with the management and implementation teams to select projects that fill gaps in the research, development, and demonstration programs. A major thrust of Industry Programs is the field demonstration or testing of technologies for subsequent implementation. Specific areas of emphasis include: 1) Evaluation of characterization and measurement systems for heavy metals and radionuclides, 2) Development and demonstration of mixed waste treatment processes employing wet oxidation and thermal treatment systems, 3) Determination of the technical viability of surface and bulk concrete cleaning subsystems, and 4) Demonstration of the capability to treat dense, non-aqueous phase liquids, and assess enhanced in-situ remediation techniques and field measurement systems for volatile organic compounds. Efforts will continue in the joint development of visualization and robotic subsystems with the crosscutting robotics program.
	$ 24,813	$ 42,700	$ 41,200

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III. Industry Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Federal Advisory Committee to Develop On-Site Innovative Technologies	Site implementation strategies were completed in the area of mixed waste, mine waste, contamination related to base closures and the cleanup of munitions. Stakeholder participating processes were structured and integrated into the internal technology development and external technology solution processes. Selected demonstrations were identified utilizing nine specific technologies at four DOE national laboratory sites.	The FAC-DOIT charter will be analyzed and renewed. The Phase I site implementation program will be assessed and technology demonstration models developed for consideration by the FAC-DOIT committee. Phase II of the mixed waste working group will be initiated for the purpose of identifying selected technologies in the private sector and international markets for the potential use at DOE sites. Three FAC-DOIT meetings will be accomplished. Each of the four working group focus areas will meet in the technology selection process no less than four times each.	Responsibility for this program has been transferred to the Mixed Waste Focus Area.
	$ 1,500	$ 500	$ 0
Industry Programs	$ 26,313	$ 43,200	$ 41,200

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Technology Integration

The Office of Technology Integration supports Environmental Management's mission and goals by facilitating progressive technology transfer of DOE-developed environmental technologies to users in industry and other Federal agencies, and from industry to DOE for use in cleaning up weapons facilities. The objectives of this program are to support EM's technology development mission by establishing processes that provide for early user, stakeholder, and regulator participation, as well as for technology transfer leading to commercialization. The main aspects of this program are defining and implementing, with the Focus Areas: (1) a stakeholder and regulator participation framework for the acceptance of emerging environmental technologies on regional and national levels; (2) a technology transfer process guided by market and business knowledge; (3) partnerships that define needs and leverage resources within the public and private sectors; and (4) communication support systems that facilitate information exchanged to link technology developers with internal and external users, and to relate DOE/OTD technology data to stakeholders. This office also: establishes processes to strengthen stakeholder participation in decision making to meet regulatory requirements; facilitates the transfer of foreign environmental technologies expertive and data; provides continuing financial assistance to the Western Governors Association initiative with the Department and other Federal agencies to demonstrate collaborative applications of innovative technological solutions to environmental cleanup problems shared by the Federal and private sectors in twenty western States; and assures communication of Environmental Management's Technology Development's successes to all stakeholders, with special emphasis for U.S.-based industry. The focus of this office is the development of effective programs and customer-driven services that stimulate improved public/private partnerships, increased U.S/International environmental competitiveness and enhanced strategic program integration.

2332

II. A. Summary Table: Technology Integration

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Domestic	$ 4,903	$ 6,789	$ 12,040
Domestic - Savannah River Region	10,000	0	0
Foreign	3,734	3,000	5,000
Total, Technology Integration	$ 18,637	$ 9,789	$ 17,040

II. B. Laboratory and Facility Funding Table: Technology Integration

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request
Sandia National Laboratories	$ 3,220	$ 1,010	$ 0
Albuquerque Operations Office	0	320	0
Ames Lab	0	235	0
Argonne National Lab (West)	0	245	0
Brookhaven National Lab	0	250	0
Chicago Operations Office	0	110	0
Lawrence Berkeley Lab	0	100	0
Los Alamos National Laboratory	0	566	0
Morgantown Energy Technology Center	0	2,400	0
Oakland Operations Office	0	805	0
Pacific Northwest Lab	0	325	0
Rocky Flats Office	0	200	0
Argonne National Lab (East)	575	245	0
Idaho Operations Office	1,280	740	0
Oak Ridge Operations Office	1,240	860	0
Richland Operations Office	592	540	0
Lawrence Livermore National Lab	1,385	70	0
Savannah River Site	10,196	270	0
All Other	149	498	17,040
Total, Technology Integration	$ 18,637	$ 9,789	$ 17,040

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Technology Integration			
Domestic	Developed the commercialization program for EM technologies for ten Integrated Demonstrations (IDs) and Integrated Programs (IPs) through a field Technology Transfer Network. This network provided technical assistance and direction for: fourteen CRADAs, twelve licenses, seventy-five partnerships, seventeen commercially available DOE-funded technologies, seven spin-off ventures, nine Program Research and Development Announcement (PRDA) technologies, seventy-six commercialization plans, and five commercialization planning workshops that trained fivty-nine Principal Investigators. Six regional industry meetings were held including four small business workshops, which resulted in eight procurements, nine partnerships, and two Cooperative Research and Development Agreements (CRADAs). The first edition to the Technology Catalogue was produced. Domestic Technology Transfer has completed four Headquarters public participation training seminars, four stakeholder meetings to review Integrated Demonstration (ID) technologies and has developed a background patents policy to protect small company-owned intellectual property and proprietary information. An introductory course for EM Program Managers on technology transfer was successful.	The Domestic Technology Transfer Division supports the Technology Focus/Crosscutting areas as follows: (1) develop and implement a technology management decision-making process to meet user needs in DOE and commercial cleanup markets; (2) provide technology deployment, commercialization and portfolio management support to Focus/Crosscutting Areas; 3) establish one national and two regional leveraging initiatives that will engage the private sector in commercializing and applying EM-developed technologies, brokering information, and promoting collaborative partnerships; 4) develop a strategy for regulatory and stakeholder acceptance of innovative technologies; 5) improve communication of EM technology development efforts by a) disseminating performance and cost data to end users and stakeholders in DOE and the private sector (e.g., via Technology Catalog, and through Internet access); and b) convey EM successes and business opportunities to internal and external stakeholders.	Develop a methodology to ensure business, regulatory, and stakeholder considerations are factored into the Focus/Crosscutting Area decision-making process: 1) Implement stakeholder and regulatory technology acceptance strategy for all Focus/Crosscutting Areas; 2) Establish and maintain centers to develop partnerships that leverage Federal, State, and local government funds and capabilities with industry; 3) Implement a formal decision-making process for Focus Area Teams to manage technology development based upon programmatic, technical, market, regulatory, stakeholder, and financial factors; 4) Engage the private sector to identify Focus Area technologies with the greatest potential for commercial application and facilitate private sector input into Focus Area decision-making process; 5) Strengthen information exchange processes between technology developers and users within the public and private sectors via mechanisms such as technology catalogs and the Global Environmental Technology Enterprise (GETE); 6) Implement an active communications program using multi-media to interface with DOE, academia, private industry, and other stakeholders for real-time decision-making and technology transfer; 7) Transfer twenty-five domestic technologies for use within the DOE complex; 8) Acquire $75 million in leveraged resources to support EM activities; and 9) Complete deployment/commercialization plans for EM-developed technologies ready for commercialization.

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III. Technology Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Domestic (Cont'd)	Provided support for the Small Business Technology Transfer Pilot Program (STTR).	Continue support for the Small Business Technology Transfer Pilot Program (STTR).	Continue support for the Small Business Technology Transfer Pilot Program (STTR).
	$ 4,903	$ 6,789	$ 12,040
Domestic - Savannah River Region	The Savannah River Technology Transfer and Economic Development program obtained Advanced Research Projects Agency (ARPA) funding for Southeastern Environmental Resources Alliance (SERA). Submitted National Water Resources Technology Center (NWRTC) announcement to DOE Savannah River. Chartered SERA and completed initial Westinghouse Savannah River Company (WSRC) staffing of SERA. Prepared plan for Integrated Demonstration Training and Test Facilities. Completed health risk assessment proposal. Completed cooperative agreement between WSRC and the Southeastern Technology Center (STC). Initiated the development of a business plan for the Advanced Analytical Center for Environmental Sciences, and completed a cooperative agreement between WSRC, STC, and the Three Rivers Solid Waste Authority.	No Activity.	No Activity.
	$ 10,000	$ 0	$ 0

2336

III. Technology Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Foreign	International Technology Transfer accelerated EM technology development through coordination and integration of 24 joint projects in 11 countries. International understanding and cooperation of EM related issues was enhanced through participation in three international organizations (International Atomic Energy Agency (IAEA), Organization for Economic Cooperation and Development/Nuclear Energy Agency (OECD/NEA), and North Atlantic Treaty Organization (NATO). International recognition of EM and the U.S. industry needs and technologies was provided through the cosponsorship of four international conferences (BERLIN '93, PRAGUE '93, BUDAPEST '94, MOSCOW '94). Russian scientific expertise and data was leveraged to achieve the EM mission objectives through 15 joint U.S.-Russian projects, in the areas of separations, vitrification, and contaminant transport. International Technology Transfer has been successful in demonstrating the capability to match international technology and site remediation needs through the EnviroTRADE information system.	International Technology Transfer will identify and transfer foreign technologies and data to the U.S. through innovative international public/private partnerships, for all Focus Areas. The identification and access of Russian EM-related technologies, technical information, and scientific expertise will be accelerated to support EM's cleanup effort. Integrate EM international activities with other DOE programs and external entities (e.g. NATO, IAEA, OECD) to support Em mission objectives. Complete commercialization of the EnviroTRADE information system.	International technology transfer will support technology development activities by identifying and transferring foreign expertise, technologies, and data to the U.S. through international organizations, bilateral agreements, cooperative Research and Development and public/private partnerships. Identify and access Russian EM-related technologies, technical information, and scientific expertise through Integrate EM's international activities with other DOE programs and external entities (e.g. NATO, IAEA, OECD) to support EM mission objectives.
	$ 3,734	$ 3,000	$ 5,000
Technology Integration	$ 18,637	$ 9,789	$ 17,040

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Program Support

Program Support focuses on activities which support management, financial, and administrative functions within the various line organizations that oversee the Technology Development and Transportation Management programs. Specific activities fall within four broad support areas: program management, office administration, information management, and quality management. Program management includes budget development and implementation, organizational and strategic planning, management of procurement activity and support service contractors, coordination and interface with Federal and State agencies and industrial concerns, development of systems engineering studies, and overall program review and integration. Office administration includes personnel development, training, travel, logistics, and other office action tracking systems development and maintenance. Information management activities involve database development and integration, document control, and records management. Quality management includes the development and refinement of quality assurance plans and procedures, quality assurance training, program evaluation and assessment, and identification of corrective actions. Portions of the Program Support activities will transfer to the EM Office of Management and Finance and the Office of Compliance and Program Coordination in FY 1996.

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II. B. Laboratory and Facility Funding Table: Program Support

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 615	$ 500	$ 0	$ -500
Chicago Operations Office	0	120	0	-120
Grand Junction Project Office	0	196	0	-196
Los Alamos National Laboratory	540	485	0	-485
Sandia National Laboratories	591	485	0	-485
Ames Lab	210	195	0	-195
Argonne National Lab (East)	230	213	0	-213
Brookhaven National Lab	194	181	0	-181
Fernald Environmental Management Project	208	219	0	-219
Idaho National Engineering Lab	1,111	864	0	-864
Morgantown Energy Technology Center	875	900	0	-900
Nevada Operations Office	560	549	0	-549
Oak Ridge Operations Office	840	659	0	-659
Pittsburgh Energy Technology Center	154	470	0	-470
Pacific Northwest Lab	791	560	0	-560
Rocky Flats Plant	397	490	0	-490
Lawrence Berkeley Lab	135	168	0	-168
Lawrence Livermore National Lab	1,060	1,024	0	-1,024
Savannah River Site	615	485	0	-485
Richland Operations Office	842	515	0	-515
All Other	27,226	28,776	33,271	4,495
Total, Program Support	$ 37,194	$ 38,054	$ 33,271	$ -4,783

2339

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Support	Provided budget, personnel, procurement, training, facility, travel and logistic support to all line organizations within EM OTD. Performed a Records Inventory and prepare Disposition Schedules for all OTD records. Updated the Management Policies and Requirements (MPR) documents as needed to reflect changes in the EM organization and development to Technology Development (TD) Management Systems that have occurred subsequent to approval of the documents. Continued development and implementation of EM-50 SOPs. Continued development of the TD elements of the EM Corporate Information Systems (CIS). Conducted evaluation of management practices to determine compliance with MP. Continued implementation of joint management process with ER and WM to assure relevancy of technology development activities. Continued improvements to cost and schedule control systems. Continued to evaluate the effectiveness of upgrades to management information systems and refine new system requirements. Continued to coordinate technical and programmatic reviews of each TD program area; implemented TD-wide procurement planning and tracking systems. Continued implementation of inter and intra project prioritization systems; implemented training classes in program management and other areas as required and performed general program planning and management functions.	Provide budget, personnel, procurement, training, facility, travel and ogistic upport to all line organizations within EM OTD. Perform a Records Inventory and prepare Disposition Schedules for all TD records. Update the Management Policies and Requirements (MPR) documents as needed to reflect changes in the EM organization and development to Technology Development (TD) Management Systems that have occurred subsequent to approval of the documents. Continue development and implementation of EM-50 SOPs. Continue development of the TD elements of the EM Corporate Information Systems (CIS). Conduct evaluation of management practices to determine compliance with MP. Continue implementation of joint management process with ER and WM to assure relevancy of technology development activities. Continue improvements to cost and schedule control systems. Continue the development of a Technology Strategic Plan identifying the technology investment undertaken in support of the EM Strategic Plan. Continue to evaluate the effectiveness of upgrades to management information systems and refine new system requirements. Continue to coordinate technical and programmatic reviews of each TD program area; implement TD-wide procurement planning and tracking systems. Continue implementation of inter and ntra project prioritization systems; implement training classes in program management and other areas as required and perform general program planning and management functions.	Provide budget, personnel, procurement, training, facility, travel and logistic support of all line organizations within EM OTD. Perform a Records Inventory and prepare Disposition Schedules for all TD records. Update the Management Policies and Requirements (MPR) documents as needed to reflect changes in the EM organization and development to Technology Development (TD) Management Systems that have occurred subsequent to approval of the documents. Continue development and implementation of EM-50 SOPs. Continue development of the TD elements of the EM Corporate Information Systems (CIS). Conduct evaluation of management practices to determine compliance with MP. Continue implementation of joint management process with DR and WM to assure relevancy of technology development activities. Continue improvements to cost and schedule control systems. Continue to evaluate the effectiveness of upgrades to management information systems and refine new system requirements. Continue to coordinate technical and programmatic reviews of each TD program area; implement TD-wide procurement planning and tracking systems. Continue implementation of inter and intra project prioritization systems; implement training classes in program management and other areas as required and perform general program planning and management functions.

2340

III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Support (Cont'd)			Initiate systems engineering studies to evaluate costs, safety, and risk for selected technology systems applicable to Mixed Low Level Waste and other waste types. Studies will provide technical basis for selecting technologies as part of a complete system and provide guidance needed to continue the development of more attractive technologies with lower costs/risks. Options for reducing the cost of depleted uranium recycle or disposal will be explored experimentally and use of depleted uranium for radiation shielding in storage and/or shipping casts will be considered as a partnership with private industry.
			$ 6,000
	$ 37,194	$ 38,054	$ 33,271
Program Support	$ 37,194	$ 38,054	$ 33,271

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Program Direction

The Program Direction program element provides for salaries, benefits, travel, training and related costs for the Federal employees at Headquarters and the DOE field offices who oversee the Technology Development and Transportation Management program activities. In addition to day-to-day management, direction and oversight of these programs, major activities are underway to improve the management systems employed by the EM Office of Technology Development. These systems include documentation of management plans and procedures, coordinating management efforts with other EM organizations, improved cost and schedule control systems, and improved management information systems. Portions of the Program Direction activities will transfer to the EM Office of Management and Finance and the Office of Compliance and Program Coordination in FY 1996.

2342

II. B. Laboratory and Facility Funding Table: Program Direction

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 1,256	$ 1,288	$ 0	$ -1,288
Oakland Operations Office	0	295	0	-295
Ohio Field Office	0	98	0	-98
Pittsburgh Energy Technology Center	0	270	0	-270
Chicago Operations Office	385	300	0	-300
Idaho Operations Office	1,423	1,200	0	-1,200
Morgantown Energy Technology Center	750	875	0	-875
Nevada Operations Office	875	875	0	-875
Oak Ridge Operations Office	582	1,013	0	-1,013
Richland Operations Office	775	700	0	-700
Rocky Flats Plant	485	485	0	-485
Savannah River Site	190	195	0	-195
All Other	8,221	9,160	14,999	5,839
Total, Program Direction	$ 14,942	$ 16,754	$ 14,999	$ -1,755

2343

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	Funding by Object Class:	Funding by Object Class:	Funding by Object Class:
	Salaries/Personnel Compensation $ 9,563	Salaries/Personnel Compensation $10,722	Salaries/Personnel Compensation $ 9,599
	Benefits 2,092	Benefits 2,346	Benefits 2,100
	Travel 1,345	Travel 1,508	Travel 1,350
	Contr. Services 1,942	Contr. Services 2,178	Contr. Services 1,950
	$14,942	$16,754	$14,999
	Provided salaries, benefits, travel, training and related costs for 164 Federal employees at Headquarters (93) and the DOE field offices (75) who oversee the Technology Development (TD) and Transportation Management (TM) program activities.	Provide salaries, benefits, travel, training and related costs for 163 Federal employees at Headquarters (72) and the DOE field offices (91) who oversee the TD and TM program activities.	Provide salaries, benefits, travel, training and related costs for 146 Federal employees at Headquarters (63) and the DOE field offices (83) who oversee TD program activities.
	168.0 FTE $ 14,942	163.0 FTE $ 16,754	146.0 FTE $ 14,999
Program Direction	168.0 FTE $ 14,942	163.0 FTE $ 16,754	146.0 FTE $ 14,999

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Education and Integrated Risk Management Initiative

The program provides for Federal staffing resources and associated funding to plan, direct, and manage the Department's Environmental Management Program. The requested funding will provide for crosscutting activities which support the overall EM mission. Program activities also include integrated risk management and public accountability activities.

Integrated Risk Management includes conducting applied research and development for risk management. It includes grants for resolving human health, environmental risk, and risk communication issues. Integrated Risk Management will conduct reviews of risk assessment activities and cost estimates at the Department of Energy's Environmental Management sites. It includes preparation of a report to Congress, grants to identify site-by-site risks to human health and the environment, identification of data gaps and uncertainties and methods to reduce them, public participation in risk evaluation and communication, and how to define costs for risk reduction.

Functions for the Office of Public Accountability will include stakeholder advocacy, environmental justice, tribal relations, communications, and strategic projects.

In FY 1996, these activities will be funded under the Office of Integrated Risk Management and the Training and Education Division.

A. Educational Development Program

The goal of the Educational Development program is to (1) ensure that DOE's current workforce has the skills, knowledge and training to carry out its mission today and in the future and (2) allow all groups within our society to participate in the successful cleanup activities.

B. Decision Support

Includes conducting applied research and development for risk management. It includes developing methodologies for risk assessment, public participation, and uncertainty analysis. It includes grants in public purpose for resolving human health, environmental risk, risk communication issues.

C. Integrated Risk Management Initiative

This includes conducting credible reviews of risk assessment activities and cost estimates at the Department of Energy's Environmental Management sites. It includes preparation of the report to Congress, grants to identify site-by-site risks to human health and the environment, identifying data gaps and uncertainties and methods to reduce them, public participation in risk evaluation and communication, and how to define costs for risk reduction.

2345

II. A. Summary Table: Education and Integrated Risk Management Initiative

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Educational Development Program	$ 14,395	$ 14,852	$ 0
Decision Support	7,084	6,789	0
Integrated Risk Management Initiative	0	17,500	0
Total, Education and Integrated Risk Management Initiative	$ 21,479	$ 39,141	$ 0

II. B. Laboratory and Facility Funding Table: Education and Integrated Risk Management Initiative

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request
Albuquerque Operations Office	$ 9,600	$ 10,427	$ 0
Sandia National Laboratories	400	500	0
Ames Lab	75	0	0
Brookhaven National Lab	300	0	0
Chicago Operations Office	1,570	625	0
Idaho Operations Office	65	0	0
Oak Ridge Operations Office	1,139	0	0
Richland Operations Office	1,121	0	0
Lawrence Livermore National Lab	390	0	0
Savannah River Site	2,168	2,800	0
All Other	4,651	24,400	0
Total, Education and Integrated Risk Management Initiative	$ 21,479	$ 38,752	$ 0

2347

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Education and Integrated Risk Management Initiative			
Educational Development Program			
Academic Partnerships	Initiated activities to make all existing partnerships self-sustaining. These partnerships continued to develop innovative strategies and methods for accomplishing curriculum change, faculty development, and outreach. Continued developing the number of course options and degrees offered at the graduate and undergraduate level. Established hazardous materials laboratories at member institutions of the HBCU/MI Consortia. Continued utilization of interactive television courses for training and academic degree requirements.	Complete funding for cooperative agreements for academic partnerships. Continue to promote interaction with other EM program offices in waste management, environmental restoration, and basic applied research.	This program has been transferred to the Training and Education Division.
Employment Program	Continued scholarships and fellowships under the Graduate/Undergraduate employment program. Continued to incorporate features to enhance work assignments for eligible applicants and to further enhance the education of students completing the program and accepting positions with the Department of Energy.	Continue scholarships and fellowships under the Graduate/Undergraduate employment program, up to the authorized level of twenty undergraduates and twenty graduate students. Continue to incorporate features to enhance work assignments for eligible applicants and to further enhance the education of students completing the program and accepting positions with the Department of Energy.	This program has been transferred to the Training and Education Division.

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III. Education and Integrated Risk Management Initiative (Cont'd):
Educational Development Program (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Employee Development/Assessment	Supported workforce development efforts, focusing on Department of Energy sites. Support and direction of these programs entailed the continual data gathering and analysis functions by conducting manpower needs assessments.	No activity.	No activity.
Systemic Investigating and Analyses	Assumed funding responsibility and continued program management for a multi-year vertically-integrated program of research, technology development, and education to address hazardous materials in aquatic environments at Tulane and Xavier universities. Completed the survey of existing literature and systems to verify and assess the status of information on major aquatic systems. Established systems studies of critical environmental pathways associated with contaminant transport. Engaged in the development, testing, and application of technologies for the protection of aquatic systems and human health impacts. Conducted workshops and conferences including domestic and international issues and themes.	Responsibility for this program has been transferred to the Contaminant Plume Containment and Remediation Focus Area.	Responsibility for this program has been transferred to the Contaminant Plume Containment and Remediation Focus Area.
Subtotal, Educational Development Program	$ 14,395	$ 14,852	$ 0

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III. Education and Integrated Risk Management Initiative (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Decision Support	Provided financial assistance to the Medical University of South Carolina (MUSC) and other educational institutions in the region, the National Council on Radiation Protection (NCRP), Temple University and Hispanic institutions for assessment of best available technologies, and standard review and risk assessment evaluation by national laboratories. It also provided for developing a catalog of Federal and University R&D activities.	Provide financial assistance to the Medical University of South Carolina (MUSC) for new biomedical techniques in dose assessment, reviews of worker health, and circulum development, risk communication and stakeholder participation. Conduct assessment of technology needs in risk assessment by national laboratories and universities. Create an independent data base of health data and risk calculation information from Federal agencies, universities and industry (September 1995) Identify Trichloroethylene hemoglobin adduct caused by human exposure to TCEs. Develop the data necessary to begin to quantify human exposure to TCE through measurement of TCE adduct in human blood samples (January 1995).	Responsibility for these activities has been transferred to the Office of Integrated Risk Management.
	$ 7,084	$ 6,400	$ 0
Integrated Risk Management Initiative	Funding was derived from taxes on other programs and activities included initiation of site assessment activities in support of the DOE Report to Congress on the risk basis of Compliance Agreements. Activities included initiation of a cooperative agreement with Tulane University for assessing risk at DOE EM sites.	Activities will include submitting a report to Congress by June 1995, which evaluates the risk to public health and safety posed by conditions at weapons complex facilities that are addressed by compliance agreements. Activities include continuation of cooperative agreement with Tulane University for reviewing risk assessment at six DOE sites. A new initiative will be a program for financial assistance award and contracts for developing credible decision making tools, conducting site specific risk assessments, risk communication and public participation in risk-based decision making. The first of the financial assistance awards will begin during the first quarter and will be completed by September 1995. This involves a	Responsibility for these activities has been transferred to the Office of Integrated Risk Management.

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III. Education and Integrated Risk Management Initiative (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Integrated Risk Management Initiative (Cont'd)		broader cross section of universities, industry and the public in the risk management process. Activities include conducting credible reviews of outstanding issues in DOE risk assessment and risk management. It includes continuation of grants to the National Council of Radiation Protection (NCRP) for assessing radiation effects at low levels and impacts on criteria and standards for clean up. Provide reports on risk-based standards for soil contamination by September 1995.	
	$ 0	$ 17,500	$ 0
Education and Integrated Risk Management Initiative	$ 21,479	$ 38,752	$ 0

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TECHNOLOGY DEVELOPMENT

I. Preface: Infrastructure Programs

In a carrying out the mission of EM, various activities appear consistently throughout all operations. To gain system wide commitment to such crosscutting activities as analytical services and emergency management, generic approaches have been initiated that will be applicable to all program areas. Techniques for supporting programmatic decisions are being developed. Central services for the chemical and physical characterization of environmental and mixed waste samples applicable across the EM program are being developed. NOTE: In FY 1994 & FY 1995, these activities are included in the Office of Technology Development budget in the Supporting Technologies and Infrastructure Programs: Emergency Management and Analytical Services. The Radiological Environmental Sciences Laboratory (RESL) landlord funding resided in the Office of Nuclear Materials and Facilities Stabilization in FY 1994 and FY 1995. These programs transfer to the Office of Compliance and Program Coordination in FY 1996.

A. Analytical Laboratory Management

Provides direction and guidance on the massive and diverse sampling and analysis effort needed to meet the requirements of the DOE EM program. This includes programs to plan and coordinate the provision of sufficfent, cost-effective laboratory analysis capacity through a combination of internal and external, commercial laboratory services. Analytical services management also provides guidance and technical assistance to the field in performing effective planning for waste and site characterization through the Data Quality Objective process. Since the quality and reliability of sampling and analysis data are vital to support decisions on remediation and to demonstrate regulatory compliance, Analytical Services Management also provides guidance and assistance in establishing and maintaining suitable quality assurance programs in the Operations Offices. In FY 1996 it will assume landlord responsibilities for RESL.

B. Emergency Management

Provides for a comprehensive program to plan for, respond to, and mitigate incidents and emergency situations, which could occur at EM facilities in support of Waste Management, Environmental Restoration, and Nuclear Materials and Facilities Stabilization activities, or during DOE-wide transportation of non-weapon material. The program consists of development and maintenance of emergency plans, systems, and capabilities including an Operational Emergency Management Team (OEMT), emergency training, emergency drills and exercises, and a Readiness Assurance Program. It also includes an occurrence notification and reporting program to track and analyze off-normal, unusual, and emergency occurrences at EM-managed facilities and during DOE-wide transportation activities. Emergency Management consists of four major components: (1) Transportation Emergency Preparedness Program (TEPP), (2) Facility Emergency Preparedness Program (FEPP), (3) EM Occurrence Reporting and Processing and (4) the Hazardous Materials Training Center.

C. Liaison and Communications

This program is responsible for facilitating and coordinating outreach activities under the responsibility of the Office of Compliance and Program Coordination to assure an integrated, consistent, effective, and efficient program for communicating to, and interacting with, the many institutional and general publics. The program supports the Transportation External Coordination Working Group (TEC), and a local Government consortium, the Urban Energy and Transportation Corporation (UETC), which provides a forum for DOE Program Managers to meet with local officials and resolve issues and concerns.

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I. Infrastructure Programs (Cont'd)

D. Hazardous Materials Training Program

The Hazardous Materials Management and Emergency Response Training center for worker safety will be a new 8-acre training site for hazardous material workers and emergency responders. This facility will be constructed on the Hanford site. The center will house approximately thirty hands-on training aids that will simulate hazardous waste management, environmental restoration, fire training, transportation, and emergency response activities. This facility will provide state-of-the-art performance-based training in both radioactive and chemical hazards and emergency response.

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II. A. Summary Table: Infrastructure Programs

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Analytical Laboratory Management			
Operating Expenses	$ 13,607	$ 14,801	$ 0
Capital Equipment	2,000	1,400	0
Subtotal, Analytical Laboratory Management	$ 15,607	$ 16,201	$ 0
Emergency Management	$ 2,144	$ 2,962	$ 0
Liaison and Communications	838	700	0
Hazardous Materials Training Program			
Operating Expenses	8,600	6,000	0
Construction	0	7,000	0
Subtotal, Hazardous Materials Training Program	$ 8,600	$ 13,000	$ 0
Total, Infrastructure Programs	$ 27,189	$ 32,863	$ 0

2354

II. B. Laboratory and Facility Funding Table: Infrastructure Programs

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request
Los Alamos National Laboratory	$ 1,460	$ 1,813	$ 0
Fernald Environmental Management Project	0	423	0
Grand Junction Project Office	0	486	0
Albuquerque Operations Office	1,045	275	0
Argonne National Lab (East)	1,650	1,680	0
Chicago Operations Office	3,670	3,550	0
Idaho Operations Office	1,795	1,325	0
Nevada Operations Office	1,000	1,768	0
Oak Ridge Operations Office	2,779	2,645	0
Pacific Northwest Lab	1,519	2,145	0
Richland Operations Office	10,619	13,747	0
Rocky Flats Plant	460	436	0
Lawrence Livermore National Lab	328	450	0
Savannah River Site	725	445	0
All Other	139	1,675	0
Total, Infrastructure Programs	$ 27,189	$ 32,863	$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Infrastructure Programs			
Analytical Laboratory Management			
Resource Management	Continued to implement the sample management system at the local and national levels. In conjunction with EPA and the Department of the Army, developed and tested an Electronic Data Delivery format to reduce time and costs for data review and database entry. Provided software to perform projected needs assessments for analytical services. Developed and utilized standard, computerized procedure to determine analytical capacity of internal laboratories. Developed software to provide statistical analyses of national sampling and analysis data. Continued to update and improve analytical needs projection and laboratory capabilities databases.	Operate the National Sample Tracking System to provide up-to-date information on costs and utilization of both internal and commercial laboratories. Assist Operations Offices in utilizing computer models to estimate current and future sample analysis needs. Provide updated national analytical needs and laboratory capacity estimates. Provide guidance and assistance on standard contracts for analytical services from commercial laboratories. Improve and support use of Electronic Data Delivery systems to reduce time and costs for data review and database entry and update. Support implementation of national interagency data element dictionary for monitoring information. Continue to operate the sample management system at the local and national levels. Develop software modules to perform automated or computer assisted data validation.	These activities have been transferred to the Office of Compliance and Program Coordination.

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III. Infrastructure Programs (Cont'd):
Analytical Laboratory Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Quality Assurance Programs	Continued to provide performance evaluation materials and develop additional site specific program evaluation (PE) materials. Continued using Interagency Agreements for standards and routine PE materials. Designed and tested an integrated assessment procedure for the environmental sampling and analysis quality assurance programs at Operations Offices. Developed statistically based procedures for review and validation of radiochemistry data. In cooperation with EPA, initiated development of processes for assessing useability of characterization data to support key decisions. Initiated dialogue with commercial laboratory sector on improving Performance Evaluation Programs. Continued cooperative projects with EPA and the private sector to provide methods validation to establish regulatory credibility of radiochemistry methods. Continued and expanded technical support for regulatory methods adaptation to meet needs of EM programs. Issued detailed guidance on sampling and analysis quality assurance and the oversight and management of analytical services to the Operations Offices. Provided technical support in the application of the Data Quality Objective process to three Operations Offices to save time and reduce costs of site and waste characterization.	Responsibility for program direction and oversight of the Radiological Environmental Sciences Laboratory (RESL) (located at INEL) will move to the Analytical Services Division from the Office of Nuclear Materials and Facilities Stabilization. The RESL will be a key component of the EM Quality Assurance program. Provide an on-going program for assessment of Operations Offices Quality Assurance Programs for environmental sampling and analysis. Develop and provide mixed waste performance evaluation samples for national use, as well as site specific materials for use by individual Operations Offices. Continue to operate the Integrated Performance Evaluation Program in conjunction with the EPA. Provide support and technical assistance in establishing the routine utilization of the Data Quality Objectives Process for planning sampling and analysis. Continue to work with EPA to develop Data Quality Assessment processes to enhance usesbility of characterization data and process knowledge. Maintain and update software to perform automated data review and evaluation. Develop process for establishing reciprocity on lab qualifications between Operations Offices to avoid duplicative audits. Continue to provide performance evaluation (PE) materials and develop additional site specific PE materials in conjunction with Operations Offices. The Office of Environmental Management, in conjunction with the EPA and commercial labs, develop more effective reporting and corrective action processes for performance evaluation	These activities have been transferred to the Office of Compliance and Program Coordination.

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III. Infrastructure Programs (Cont'd):
Analytical Laboratory Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Quality Assurance Programs (Cont'd)		sample programs. Perform integrated assessments of the environmental sampling and analysis quality assurance programs at four Operations Offices. Provide guidance and support the implementation of radiological health and safety oversight of commercial laboratories.	
Analytical Support	Continued adding radiochemical methods and update of the DOE Methods Compendium. Began collection of sampling methods for inclusion in the compendium. Continued support and upgraded the electronic methods database. Continued adapting methods for higher radioactivity environmental samples. Continued evaluation of field analysis methods. In conjunction with EPA, other Federal agencies, States, and the private sector, supported efforts to provide cost and time saving flexibility in the application of regulatory methods. Supported the development and implementation of on-site methods for quicker, less expensive data.	Continue adding radiochemical methods and update the DOE Methods Compendium. Continue the development of more efficient radiochemical methods and the modification of regulatory methods for use on radioactive samples. Maintain and enhance the electronic methods database. Promote the use of field analytical methods by developing and publishing method performance data. Coordinate method development and validation activities with regulators and professional societies to facilitate credibility and acceptability of new and modified methods. Update analytical acquisition strategy based on needs projection and laboratory capabilities databases and private sector capabilities. Continue evaluation of sampling methods for inclusion in the compendium. Continue to support and upgrade the electronic methods database. Continue adapting methods for higher activity environmental samples. Continue support for implementation of field analysis methods. Provide for inclusion of DOE analytical methods in the EPA Environmental Monitoring Methods Index. Provide technical	These activities have been transferred to the Office of Compliance and Program Coordination.

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III. Infrastructure Programs (Cont'd):
Analytical Laboratory Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Analytical Support (Cont'd)		assistance and consultation to Operations Offices in applying Data Quality Objective process. Continue to work with stakeholders to improve the delivery of analytical services.	
Capital Equipment	Continued to evaluate field measurement, screening, and sampling equipment. This included purchase of field portable chemical measurement systems and kits. Enhanced capabilities to produce site specific laboratory performance evaluation (PE) materials. Production of these materials required some specialized mixing and blending equipment. Provided computer hardware, software, and communication systems to implement DOE-wide sample management system.	Provide analytical equipment such as gas chrometograph/mass spectrometers and inductively coupled plasma (ICP) mass spectrometers to enhance the capabilities of Federally staffed facilities at RESL and Environmental Measurements Laboratory to provide more effective Federal oversight of commercial laboratories and laboratories operated by M&O contractors. Upgrade capabilities for mixed waste and site specific PE sample production and certification. Evaluate and document effectiveness of new instrumentation for field and laboratory analytical determinations.	These activities have been transferred to the Office of Compliance and Program Coordination.
	$ 2,000	$ 1,400	$ 0
Subtotal, Analytical Laboratory Management	$ 15,607	$ 16,201	$ 0

III. Infrastructure Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Emergency Management			
Transportation Emergency Preparedness Program (TEPP)	Continued implementation of TEPP multi-year program plan. Promulgated planning, training, and exercise guidance to DOE field elements. Managed external coordination activities providing support to a State/Tribal/local working group on transportation issues including emergency preparedness. Maintained training programs for DOE Radiological Assistance Program (RAP) teams and State and local emergency responders. Maintained exercise program, including conduct of TRANSAX-94 and the Waste Isolation Pilot Plant Transportation Emergency Exercise (WIPPTREX) series exercises. Continued DOE RAP team field assistance. Conducted limited self-assessment and program verification activities. Applied existing technology, e.g. Atmospheric Release and Advisory Capability (ARAC), Aerial Measurement System (AMS), cask design, and route modeling to transportation emergency preparedness. Managed the DOE TEPP Steering Committee under the Emergency Management Advisory Committee. Managed the External Coordination Program for TEPP to include support to the State/Tribal/local Working Group on transportation emergency preparedness issues. Continued to implement the Emergency Exercise Program: conducted TRANSAX 93 in New Mexico, Joint Response 93 in Fernald, waste tank exercise (Freemont) with Richland, In Tank Precipitation exercise with Savannah River, 242-A Evaporator exercise with RL, exercise with West Valley, and WIPPTREX 93 in Utah.	Continue implementation of TEPP multi-year program plan. Continue to promulgate planning, training, and exercise guidance to DOE field elements. Continue to manage external coordination activities providing support to a State/Tribal/local working group on transportation issues including emergency preparedness and training. Limit expansion of training programs for DOE RAP teams and State and local emergency responders. Maintain WIPPTREX exercise program, and expand concept to include conduct of other field element non-WIPP transportation exercises. Continue DOE RAP team field assistance. Continue to conduct limited self-assessment and program verification activities. Develop stronger partnerships between DOE and its various stakeholders for transportation preparedness. Expand planning, training, and exercise programs for DOE RAP teams and State, Tribal, and local emergency responders to other areas of the country beyond the Western states transportation corridor.	These activities have been transferred to the Office of Compliance and Program Coordination.

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III. Infrastructure Programs (Cont'd):
Emergency Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Emergency Preparedness Program (TEPP) (Cont'd)			
EM Facility Emergency Preparedness Program (FEPP)	Maintained EM Operation Emergency Management Team (OEMT) Plan and implemented EM Emergency Exercise and Training Plan for EM OEMT, including a system-wide emergency exercise at a selected EM facility. Managed EM Duty Officer Program. Developed EM ERAP, conducted field ERAP appraisals, and implemented limited self-assessment and program verification activities. Applied existing technology through specialized planning at selected EM facilities using ARAC and AMS. Provided field technical assistance to the Radiological Assistance Program (RAP). Completed the yearly review of fourteen EM field office and other Program Secretarial Office Emergency Readiness Assurance Plans (ERAPs) and developed the EM Headquarters (HQ) Summary ERAP. Managed the delivery of training for DOE Radiological Assistance Program (RAP) Teams. Revised the EM Emergency Management Plan and developed EM Emergency Preparedness Procedures for implementation of OEMT responsibilities during EM operational emergencies. Revised OEMT training materials for the Emergency Operations Center compatibility and to incorporate exercise lessons-learned and job task analysis (JTA) results.	Continue to maintain EM OEMT Plan and implement EM Emergency Exercise and Training Plan for EM OEMT, including a system-wide emergency exercise at a selected EM facility. Continue to manage EM Duty Officer Program. Continue to develop EM ERAP, conduct selected field ERAP appraisals, and implement limited self-assessment and program verification activities.	These activities have been transferred to the Office of Compliance and Program Coordination.

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III. Infrastructure Programs (Cont'd):
Emergency Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
EM Occurrence Notification and Reporting Program (ONARP)	Maintained and implemented EM ONARP Standard Operating Procedure (SOP). Conducted analysis and trending of operations occurrence data. Provided training and support to EM Program Managers. Initiated DOE Order 5000.3B self-assessment and program verification activities. Managed the ONARP which included ONARP training for EM Program Managers at HQ. Completed reviews of all EM facility ONARP implementation procedures for DOE Order 5000.3A/B.	Continue to maintain and implement EM ONARP SOP. Continue to conduct analysis and trending of operational occurrence data. Continue to provide training and support to EM Program Managers. Continue to initiate limited DOE Order 5000.3B self-assessment and program verification activities.	These activities have been transferred to the Office of Compliance and Program Coordination.
Subtotal, Emergency Management	$ 2,144	$ 2,962	$ 0
Liaison and Communications	Supported development of the Transportation External Coordination (TEC) Working Group, providing external groups' input into transportation and emergency management activities and decision making. Developed planning process with western states through the Western Governors' Association (WGA) to help prepare for cesium shipments for the IOTECN facility to Hanford. Sponsored program-specific workshops through the Urban Energy and Transportation Corporation to foster greater awareness of transportation and emergency management for local governmental officials.	Continue cooperative agreement with the Urban Energy and Transportation Corporation (UETC), which involves sharing information with external parties such as local governments and representative organizations. Conduct two Local Government Network Conferences to address transportation institutional issues with local jurisdictions and to coordinate with other DOE offices. Publish and distribute the quarterly transportation newsletter directed toward local-government officials in an effort to assist DOE efforts to communicate with the stakeholders. Development of an intern program and a model grants program will begin. Participate in the Transportation External Coordination Working Group meetings.	Responsibility for this program has been transferred to the Transportation Management Program.
	$ 838	$ 700	$ 0

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III. Infrastructure Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hazardous Materials Training Program			
Operating	Completed surveying, mapping, environmental review, functional design, conceptual reviews, and a value engineering of the HAMMER facility. Provided for the operation of the temporary HAMMER facility, and provided overall program and project management.	Increase worker safety and protection of public health and the environment through the hazardous materials training program. Complete preliminary design, operate the temporary HAMMER facility, assist in the development of hazardous worker safety educational programs, and provide overall program management and construction project administration.	These activities have been transferred to the Office of Compliance and Program Coordination.
	$ 8,600	$ 6,000	$ 0
Construction	No construction activity.	This funding will be used to complete definitive design, finish one-half of the below-grade and begin the above-grade construction of the HAMMER facility. This will also fund construction project management.	These activities have been transferred to the Office of Compliance and Program Coordination.
	$ 0	$ 7,000	$ 0
Subtotal, Hazardous Materials Training Program	$ 8,600	$ 13,000	$ 0
Infrastructure Programs	$ 27,189	$ 32,863	$ 0

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OVERVIEW

TRANSPORTATION MANAGEMENT

The Department-wide Transportation Management (TM) Program, which resides in the Office of Environmental Management, Office of Compliance and Program Coordination, develops and implements effective strategies, techniques, methods, and policy guidance for safe, secure, efficient, and cost-effective transportation of DOE materials, including hazardous materials (particularly radioactive), hazardous substances, and hazardous and mixed wastes. The Program facilitates and coordinates shipping activities (i.e., transportation operations activities such as negotiating rates and services, developing carrier selection standards, etc.) on behalf of the responsible DOE program; provides training to ensure compliance and enhanced safety to DOE and contractor employees (as well as Federal, State, and local agencies) on applicable regulations and procedures governing the packaging, handling, and transportation of hazardous materials (including radioactive), wastes, and substances; ensures the availability of packagings to meet programmatic requirements that are in compliance with applicable regulations; develops and maintains data systems and technologies to enable DOE and other interested parties to retrieve and analyze information on DOE transportation and packaging activities. The Transportation Management Program performs appraisals of the DOE field transportation and packaging operations to assure they are in compliance with all applicable regulations and DOE operating procedures and guidelines.

The decrease in the FY 1996 budget request is due to higher priority departmental initiatives. Performance measures have been developed to address the following objectives: continue to conduct significant appraisals and provide technical assistance and guidance resulting in improved program performance, environmental compliance, and workplace safety and health; maintain the DOE transportation safety record.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(obligations in thousands)

SUMMARY OF CHANGES

Transportation Management

FY 1995 Appropriation	$20,684
- Adjustments	0
FY 1995 Adjusted	$20,684
- Transfer of Liaison and Communications from Technology Development ($700) and an increase for outreach activities ($9)	+709
- Continue development of modules for the Transportation Information Network	+275
- Contractor Reductions	-1,145
- Decrease for higher priority funding and program efficiencies	-4,365
FY 1996 CONGRESSIONAL BUDGET REQUEST	$16,158

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Transportation Management

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Transportation Management Programs					
Operating Expenses	$ 19,243	$ 20,240	$ 0	$ 20,240	$ 15,918
Capital Equipment	300	444	0	444	240
Subtotal, Transportation Management Programs	$ 19,543	$ 20,684	$ 0	$ 20,684	$ 16,158
TOTAL	$ 19,543	$ 20,684	$ 0	$ 20,684	$ 16,158
Summary					
Operating Expenses	$ 19,243	$ 20,240	$ 0	$ 20,240	$ 15,918
Capital Equipment	300	444	0	444	240
Total Program	$ 19,543	$ 20,684	$ 0	$ 20,684	$ 16,158
Staffing (FTEs)	01/	01/	0	0	02/

1/ Funding for FTEs was included in the Technology Development Program budget.
2/ Funding for FTEs is included in the Compliance and Program Coordination budget.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Transportation Management

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Los Alamos National Laboratory	$ 185	$ 75	$ 0	$ 75	$ 58
Albuquerque Operations Office	70	100	0	100	109
Sandia National Laboratories	6,850	6,651	0	6,651	5,710
Subtotal, ALBUQUERQUE OPERATIONS OFFICE	$ 7,105	$ 6,826	$ 0	$ 6,826	$ 5,877
CHICAGO OPERATIONS OFFICE					
Argonne National Lab (East)	$ 1,000	$ 769	$ 0	$ 769	$ 382
Chicago Operations Office	400	10	0	10	0
Subtotal, CHICAGO OPERATIONS OFFICE	$ 1,400	$ 779	$ 0	$ 779	$ 382
IDAHO OPERATIONS OFFICE					
Idaho Operations Office	$ 25	$ 0	$ 0	$ 0	$ 0
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 30	$ 0	$ 0	$ 0	$ 0
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Lab	$ 4,471	$ 3,650	$ 0	$ 3,650	$ 2,820
Oak Ridge Institute for Science & Education	0	255	0	255	132
Oak Ridge Operations Office	200	90	0	90	121
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 4,671	$ 3,995	$ 0	$ 3,995	$ 3,073
RICHLAND OPERATIONS OFFICE					
Pacific Northwest Lab	$ 0	$ 145	$ 0	$ 145	$ 0
Richland Production Facilities	0	3,818	0	3,818	0
Richland Operations Office	6,267	0	0	0	3,728
Subtotal, RICHLAND OPERATIONS OFFICE	$ 6,267	$ 3,963	$ 0	$ 3,963	$ 3,728

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FIELD OFFICE FUNDING BY SITE - Transportation Management (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 117	$ 5,121	$ 0	$ 5,121	$ 3,098
ALL OTHER	$ -72	$ 0	$ 0	$ 0	$ 0
TOTAL	$ 19,543	$ 20,684	$ 0	$ 20,684	$ 16,158

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

TRANSPORTATION MANAGEMENT

I. Preface: Transportation Management Programs

Transportation Management is responsible for assuring the safe, secure, and economical transportation of DOE materials, including radioactive and other hazardous materials, substances, and wastes, to meet the needs of Departmental programs. It oversees the policy, direction, audit, and appraisal of the transportation operations, traffic management, and packaging operations programs, and provides institutional support and public information on transportation issues and topics. It assures the uninterrupted flow of all goods and materials of the Department to achieve production, waste management and environmental restoration goals and objectives. It is also responsible for the coordination of DOE-wide integrated transportation research, development, testing, and evaluation programs, and supporting package certification and regulatory policy development.

The Transportation Management Program has four focus areas: (1) Policy & Guidance -- provide clear and consistent policy and guidance for achieving excellence in operations by ensuring consistent interpretation of external policy and guidance and establishing DOE-wide policy and guidance for transportation management; (2) Technical Assistance -- provide technical assistance to enhance effectiveness of DOE operations; (3) Appraisal & Analysis -- conduct technical reviews to ensure compliance with standards and requirements, to assess operations, and integrate and analyze performance data to effect continuous improvements in DOE transportation and packaging operations; and (4) Coordination -- provide single point of communication between HQ and each site on issues that crosscut DOE organizations and coordinate and integrate approaches to DOE-wide issues, initiatives, and activities.

A. Transportation Logistics

Consists of four major activities: operations; training; transportation automation; and regulatory compliance technical assessment. It is responsible for developing, in conjunction with DOE Program Offices, the policy and framework for ensuring the safe, secure and economical transportation and logistical needs of DOE materials, including hazardous materials (particularly radioactive), hazardous substances, and hazardous and mixed wastes, to meet the needs of DOE program and policies.

B. Transportation Systems Engineering and Analysis

Consists of five major activities: explosives classification; packaging engineering and analysis; packaging research and development; transportation risk analysis; and packaging operations. It provides for safe, efficient, and certified transportation packagings for the DOE complex. The program provides the resources to maintain and enhance transportation services to the DOE in an environment of evolving waste forms and regulatory instability.

C. Transportation Outreach

Provides institutional and outreach support, recommends solutions, and works with external parties to resolve their concerns and develop information materials that contribute to an understanding of the issues. This program will be moved to the Liaison and Communications program in FY 1996.

D. Transportation Management

The Transportation Management division will provide funding for awards to small businesses for research and development.

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I. Transportation Management Programs (Cont'd)

E. Liaison and Communications

This program is responsible for facilitating and coordinating outreach activities to assure an integrated, consistent, effective, and efficient program for communicating to, and interacting with, the many institutional and general publics. The program supports the Transportation External Coordination Working Group, and a local Government consortium, the local government network, which provides a forum for DOE Program Managers to meet with local officials and resolve issues and concerns.

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II. A. Summary Table: Transportation Management Programs

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Transportation Logistics	$ 11,134	$ 9,864	$ 7,898	$ -1,966
Transportation Systems Engineering and Analysis	6,209	8,476	5,682	-2,794
Transportation Outreach	1,800	1,800	0	-1,800
Transportation Management	100	100	103	3
Liaison and Communications	0	0	2,235	2,235
Capital Equipment	300	444	240	-204
Total, Transportation Management Programs	$ 19,543	$ 20,684	$ 16,158	$ -4,526

II. B. Laboratory and Facility Funding Table: Transportation Management Programs

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 70	$ 100	$ 109	$ 9
Los Alamos National Laboratory	185	75	58	-17
Sandia National Laboratories	8,050	6,651	5,710	-941
Argonne National Lab (East)	1,000	769	382	-387
Chicago Operations Office	400	10	0	-10
Idaho Operations Office	25	0	0	0
Nevada Operations Office	30	0	0	0
Oak Ridge Institute for Science & Education	0	255	132	-123
Oak Ridge National Lab	4,471	3,650	2,820	-830
Oak Ridge Operations Office	200	90	121	31
Pacific Northwest Lab	0	145	0	-145
Richland Operations Office	6,267	0	3,726	3,726
Washington Headquarters	65	5,121	3,098	-2,023
All Other	0	3,818	0	-3,818
Total, Transportation Management Programs	$ 19,563	$ 20,684	$ 16,158	$ -4,526

2372

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Management Programs			
Transportation Logistics	Continued to maintain the baseline DOE-wide transportation programs to provide uniformity and consistency in ensuring DOE materials transportation activities are accomplished in a fully compliant, cost-effective, and safe manner.	Efforts will continue to maintain the baseline resources for a DOE-wide transportation program to provide uniformity and consistency in ensuring DOE materials transportation activities are accomplished in a fully compliant, cost-effective, and safe manner that is consistent with stakeholder and regulator concerns.	Continue baseline programs to ensure transportation activities are performed in compliance with applicable laws, regulations, and DOE Orders and addresses stakeholder concerns.
	Continued efforts to integrate systems under the Transportation Information Network. Coordinated standardization of highway, rail, water, and air routing models across all components of the DOE Transportation Information Network (utilization of these models by Federal, States, Tribes, and the public will standardize results and decision-making across transportation processes of DOE). Completed implementation of the DOE Transportation Information Network/ Automated Transportation Management System Version 1.0 at sixteen DOE sites. This implementation will automate approximately 80 percent of DOE transportation business. Utilized the DOE transportation and tracking satellite communication system (TRANSCOM) to support tracking of a Department of Defense/Navy shipment from Knoxville, TN to Groton, CT by barge.	Efforts will continue on the integration of transportation related systems under the Transportation Information Network (TIN). TIN was implemented on a DOE-wide basis in FY 1994, and additional modules will be incorporated in FY 1995. TIN allows a large number of sites to access the necessary tools to accomplish transportation activities in a fully compliant manner, as well as reduces the redundancy, cost, and duplicative systems (as recommended by IG/GAO in recent studies). The integration of various departmental data systems will provide quicker access to reliable, accurate data to aid decision making and enhance program accomplishment.	Continue development of implementation tools and begin integration and utilization of computing and information systems throughout the DOE complex. Begin implementation of a transportation operations readiness facility to provide Headquarters program elements with access to data management tools.
	$6,703	$5,160	$3,975

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III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Logistics (Cont'd)	Developed the Hazardous Materials Modular Training Program to meet the new Department of Transportation (DOT) requirements, 49 CFR 172, Subpart H, which prescribes requirements for training hazardous material (HAZMAT) employees. Entered into a cooperative partnership with the Department of Transportation and the National Safety Council to provide the DOE-developed Hazardous Materials Modular Training Program to the HAZMAT community on a national basis (this partnership will provide quality training to all hazardous materials employers for meeting the requirements of 49 CFR 172, Subpart H).	The Hazardous Materials Modular Training Program will be updated to reflect new regulations regarding transportation, and packaging (49 CFR, 40 CFR, 29 CFR, etc.) as well as the advanced training programs to ensure only qualified, knowledgeable transportation specialists are authorizing shipments. A computer-based training version of the modular program will be distributed to the DOE community to meet the requirements for recurrent training as defined in 49 CFR 172.700.	Maintain and enhance the baseline training program for transportation HAZMAT employees. Conduct classes necessary to ensure compliance and understanding of the regulations governing the transportation and packaging of hazardous materials (particularly radioactive), substances, and wastes.
	$2,235	$1,675	$1,325
	Completed five transportation technical assessments of the Uranium Mill Tailings Remedial Action sites, to ensure that transportation and packaging operations are conducted in accordance with all applicable regulations (in support of the Office of Waste Management-Site Program Division). Continued support of participation in consensus standards revisions and development to ensure DOE positions are considered in consensus standards that are referenced in regulations affecting transportation.	The technical assessment program will be continued and enhanced to ensure that sites are aware of the regulations applicable to their transportation operations and the technical assistance program will be expanded to ensure sites have the necessary tools and implementation procedures to comply with existing and anticipated regulations.	Provide assessment teams and conduct ten assessments to evaluate field element and contractor transportation activities. Provide review and analysis of regulatory changes and address high-visibility issues that affect transportation management. Participate in regulatory changes affecting transportation and packaging to ensure DOE's concerns are addressed.
	$1,343	$2,074	$1,680

2374

III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Logistics (Cont'd)	Provided support to the Western Operations Division, EM-322, in preparation of the Cesium Shipping Campaign. Also, provided support to the Office of Spent Fuel and Special Projects for their foreign reactor fuel campaign.	Provide transportation operations guidance documents to complement and enhance the DOE Orders. Continue work on the revision of the DOE Orders 1540 series. Complete and implement the DOE-wide truckload rates program. Initiate efforts to negotiate rate and service agreements with the railroads for DOE materials movements, with emphasis on radioactive waste and spent nuclear fuel. Expand the Motor Carrier Evaluation Program with the objective of requiring all DOE paid freight to be moved only on successfully evaluated motor carriers. Provide the baseline resources and activities to integrate transportation considerations into Departmental program planning; and complete the initial Departmental transportation needs assessment including transportation logistics, packaging, staffing, and organizational alignment. Support full implementation by providing the permanent co-chair of the Transportation Integration Standing Working Group, which provides the mechanism/forum for identifying and resolving transportation issues with DOE program offices engaged in significant transportation activities.	Conduct freight rate negotiations. Conduct twenty-five motor carrier evaluations. Continue program integration activities through the Transportation Internal Coordination/Working Group.
	$853	$955	$910

2375

III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Systems Engineering and Analysis	Continued the explosives registration and classification program to ensure materials are transported in accordance with the Department of Transportation (DOT) regulations and properly registered with the DOT.	Activities will continue on the explosives classification/registration program to ensure shipments are made in compliance with the applicable regulations. Will also implement an activity to maintain and protect historical and background technical data supporting past and current registrations.	Continue the technical review and submittal of explosive classifications to the Department of Transportation for registration. Maintain involvement in the Explosives Safety Committee.
	$489	$340	$255
	Continued to support technical activities associated with the development, certification, and risk assessment of transport packages and regulation reevaluation. Continued support of packages requiring certification to respond in a timely manner so that DOE program schedules do not slip as a result of inadequate packaging availability. Completed study "Safety of Shipments of Plutonium by Sea" pursuant to Section 2904 of the Energy Policy Act of 1992.	Complete follow-on activities associated with the study, "Safety of Shipments of Plutonium by Sea," to provide a more comprehensive evaluation of these shipments. Two additional studies will be completed; a technical study to evaluate the risks associated with the sea shipment of plutonium and radioactive materials related to the reprocessing cycle, and a study to evaluate physical protection measures used in such shipments. Develop package concepts for overpacks of drums containing Type B quantities of radionuclide materials and for transporting high-activity liquids.	Continue efforts to identify means to use recycled materials for the development of packagings. Continue to support technical activities to improve the risk assessment of shipments of radioactive and hazardous materials. Develop a procurement and distribution system for packagings to consolidate DOE needs and reduce costs.
	$957	$2,266	$2,173
	Developed a Procurement Guide for Performance-Oriented Packagings which clarifies the procurement process and eliminates potential problems between shipper and manufacturer requirements and delineates responsibilities for compliance with DOT regulations. The Beneficial Uses Shipping System (BUSS) task was transferred to Westinghouse Hanford to prepare for the planned shipments of cesium capsules from the IOTECH facility in Colorado to Hanford and shipments were initiated using it.	Initiate Phase I of the DOE-wide packaging needs assessment based on the output of the initial overall DOE Transportation Needs Assessment to be completed in early FY 1995. Continue the Packaging Operations Program, which began in FY 1994, to provide more accurate and up-to-date information on packagings available to the DOE community, to reduce costs associated with operations and maintenance of DOE used packagings, and to identify packagings needed to support planned DOE program shipments.	Efforts will continue on the collection of data regarding the availability and use of packagings within the DOE complex to promote more efficient utilization of existing inventories.

2376

III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Systems Engineering and Analysis (Cont'd)	$1,043	$936	$201
	Completed development of high-output accelerometer and a ruggedly constructed linear variable differential transformer. Both of these devices will provide capability for enhanced data collection in the dynamic testing of radioactive materials packages.	Efforts will continue on the use of recycled materials for development of packagings. Continue chemical compatibility testing of the effects of mixed wastes on packaging component materials; implement numerical optimization design code integration; complete thermal test series; continue R&D activities associated with impact limits and seals and non-linear dynamic analysis.	Efforts will continue on the development and refinement of analytical tools for the assessment of the response of radioactive packagings to accident conditions to permit designs to utilize materials more effectively and to provide additional assurance that regulations are met.
	$3,720	$4,934	$3,053
Transportation Outreach	Developed, coordinated, and implemented processes to facilitate effective understanding and interactions among DOE decisionmakers and the affected and interested public. Continued to expand transportation network interactions with States, Tribes, local Governments, and DOE site programs. Continued to support National Environmental Policy Act (NEPA) compliance activities through public involvement planning, scoping workshops, and hearings and documentation. Continued issue analysis efforts through cooperative efforts with urban agreements and institutional task force.	Continue to develop, maintain, and enhance processes that facilitate effective understanding and interactions among DOE decisionmakers and the various parties interested in DOE's transportation management programs. Interested parties include EM and DOE program offices, other Federal agencies, Congress, Tribal, State, and local government officials, private industry, technical, and professional groups and special interest groups.	Responsibility for these activities has been transferred to Liaison and Communications.

2377

III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Transportation Outreach (Cont'd)	Developed informational products, activities, and resources to explain the transportation program and to respond to public inquiries.	Provides information products and services to support transportation, and emergency management functions. In FY 1995, new initiatives include complete evaluations of all existing information products and redirecting those activities that are found to be less effective; updating and producing a video disc version of the Visual Resource Guide; continuation of the exhibit program, updating as necessary, and developing an exhibit on transportation and Federal facilities compliance/mixed waste program; and completion of the Material Flow Information Systems.	Responsibility for these activities has been transferred to Liaison and Communications.
	No activity.	Coordinate at least two meetings of the Transportation Integration Standing Working Group. In 1995, new initiatives will include funding additional Tribes for training and technical assistance. Coordinate two meetings of the Transportation External Coordination Working Group, which provides the forum for DOE transportation stakeholders to identify issues for DOE resolution, and providing additional support to other State organizations for transportation planning.	Responsibility for these activities has been transferred to Liaison and Communications.
	$ 1,800	$ 1,800	$ 0
Transportation Management	This program supported DOE's FY 1994 Small Business Innovative Research (SBIR) program.	This program supports DOE's FY 1995 SBIR program. Funding will provide for awards to small businesses for research and development.	This program will support DOE's FY 1996 SBIR program. Funding will provide for awards to small businesses for research and development.
	$ 100	$ 100	$ 103

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III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Liaison and Communications	These activities were supported by the Technology Development Program.	These activities are supported by the Technology Development Program.	Continue activities to address the needs of key external decision-makers and the public. Continue to coordinate with other programs and the field to leverage resources and outreach efforts effectively. Support the development of a national forum devoted to addressing the unique needs of tribes in preparing for shipments of DOE hazardous and radioactive wastes. Conduct related activities to address requirements of the American Indian Religious Freedom Act (AIRFA) that pertain to natural and cultural resources. Sponsor three local government network conferences on the transportation of hazardous and nuclear materials, which will include more than 100 key local officials and will feature speakers of national interest. Continue to focus local government network on DOE field and site activities to promote integration of transportation and emergency response planning. Continue to develop informational materials to assist in a better understanding of the transportation and emergency management activities within DOE. Products will include factsheets, videos, exhibits, and other resource documents. Coordinate two meetings each with the Transportation Standing Working Group and the Transportation External Coordinating Working Group. $ 2,235

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III. Transportation Management Programs (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Provided computer equipment for the Transportation Information Network/Electronic Data Interchange (TIN/EDI) Central System and other existing systems such as Package Management Tracking System (PMTS), Radioactive Material Transportation Analysis (RADTRAN), etc.	Provide for additional disk storage capability on the Transportation Information Network; provide for maintenance and upgrade to existing systems (RADTRAN, Transportation Communication and Tracking System (TRANSCOM), Shipment Mobility Accountability Collection (SMAC), PMTS, etc.); procurement of test articles for packaging test equipment and instrumentation.	Provide for additional disk storage capability on the TIN; provide for maintenance and upgrade to existing systems (RADTRAN, TRANSCOM, SMAC, PMTS, etc.); procurement of test articles for packaging test equipment and instrumentation.
	$ 300	$ 444	$ 240
Transportation Management Programs	$ 19,543	$ 20,684	$ 16,158

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OVERVIEW

Nuclear Materials and Facilities Stabilization

I. INTRODUCTION

The Office of Nuclear Materials and Facilities Stabilization, EM-60 (formerly the Office of Facility Transition and Management), was established in July 1992 within Environmental Management (EM) to coordinate and oversee the orderly transition of contaminated installations/facilities from other program offices to EM, once these properties are determined to be surplus to their mission.

The Office of Nuclear Materials and Facilities Stabilization (EM-60) protects workers, the public, and the environment from exposure and contamination associated with radioactive and hazardous wastes and materials contained within these facilities. The majority of these surplus facilities were former weapons production facilities and were not designed for long-term storage. Many of these facilities have exceeded their design life and are in poor physical condition. Consequently, the surveillance and maintenance activities for these facilities and hazardous materials are expensive and labor intensive. An active program has been established for surplus facilities to identify, plan and accomplish projects that will properly store the materials and reduce the funding requirements. Many of the hazardous items contain fissile material and demand an unusually high level of prevention to avoid inadvertent criticality conditions from occurring. Some of the most noteworthy hazards and concerns include:

- 16 nuclear reactors
- 7 high level radioactive processing buildings
- 1,000 surplus buildings (most contain low level radioactive contamination)
- 1,000,000 liters of radioactively contaminated acids
- 1,500 irradiated, highly radioactive fuel tubes
- 23,500 kilograms of plutonium in various forms
- 29,000 packages of plutonium materials and waste

All maintenance and stabilization activities are conducted with full participation of involved stakeholders. The interests of stakeholder groups encompass environmental protection, individual safety and proper management of surplus facilities located close to large metropolitan areas. Their interests focus on activities with major facilities located in Colorado, Florida, Idaho, Ohio, South Carolina, Tennessee, Washington, and California.

The Office of Nuclear Materials and Facilities Stabilization is also actively involved in transitioning the workforce in both size and technical capability from the requirements to support the operational weapons production mission, to the requirements to support the deactivation and stabilization mission.

II. BACKGROUND

The Department of Energy (DOE) has declared many of the facilities formerly used in the production of nuclear weapons and nuclear research surplus to current defense and other DOE programmatic needs. Many of these facilities are contaminated with nuclear and chemical hazards; therefore, they require a significant amount of surveillance and maintenance to adequately protect our workers and the environment from the existing hazards. Since this activity differs from the former production mission, the management of these facilities is being transferred to the Assistant Secretary for Environmental Management once the facility is declared surplus.

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Within the Office of Environmental Management, the Office of Nuclear Materials and Facility Stabilization was established and assigned the responsibility to deactivate these facilities. Deactivation is the process of placing a contaminated facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public and the environment until decommissioning is completed. Deactivation actions include the removal of fuel, draining and/or de-energizing of nonessential systems, removal of stored radioactive and hazardous materials and related actions, and at some facilities operational-type activities such as final process runs.

Additionally, the Office of Nuclear Materials and Facilities Stabilization is assigned landlord responsibility for selected facilities to ensure utilities and support services are maintained at an adequate level to support the environmental remediation activities at the site. Landlord activities typically include site infrastructure needs, i.e. roads, sewer systems, electrical distribution systems, communications, etc. as well as providing services such as medical, emergency, and cafeteria services. In FY 1996 adequate funds are included to maintain essential operations but many construction project funding requirements are being delayed to meet funding restrictions while alternatives are being explored.

This Overview presents the total program content, objectives, and accomplishments to date of the Defense Environmental Restoration and Waste Management related activities.

III. FISCAL YEAR 1996 OBJECTIVES

In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will achieve the following major items:

ROCKY FLATS

- Complete filtered venting of 2,000 drums containing plutonium materials to prevent explosion and possible failure of containment
- Remove plutonium metal and oxides from Building 779
- Drain 7,000 liters of plutonium solution from tanks in Buildings 771 and 371 and continue precipitation and cementation activities
- Thermally stabilize 100 kilograms of pyrophoric plutonium oxides
- Convert 2,700 liters of nitrate solutions comprising 570 kilograms of 93.2 percent highly enriched uranium to a solid state form

RICHLAND

- Complete 78 percent of the Plutonium-Uranium Extraction (PUREX) deactivation project
- Complete transfer of 947,000 liters of surplus uranium contaminated nitric acid
- Reduce surveillance and maintenance of 1,000 kilograms of plutonium bearing material at the Plutonium Finishing Plant

IDAHO

- Initiate deactivation of the Rover Dry End Process including the removal of up to 150 kilograms of uranium in graphite ash from the process
- Complete definitive design for deactivation of the calcine cell within the Old Waste Calcining Facility
- Complete characterization and planning of approximately 22 prioritized, non-radioactive, surplus facilities for disposition in FY 1997

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SAVANNAH RIVER

- Complete stabilization of the F-Canyon plutonium-239 solution. The solution will be converted to metal
- Complete stabilization of the H-Canyon Plutonium-242 solution. The solution will be converted to an oxide

OAK RIDGE

- Prepare a baseline for 19 surplus facilities at the Oak Ridge National Laboratory

OHIO

- Stabilize and repackage plutonium currently stored without High-Efficiency Particulate Air (HEPA) filtration system in T-Building at the Mound Plant

ALBUQUERQUE

- Complete disposition of former Defense Program equipment at the Pinellas Plant
- Complete disposition of classified parts and records at the Pinellas Plant
- Provide research and development (R&D), engineering, safety analysis, procedures, and training support for the plutonium liquids stabilization effort at Rocky Flats
- Conduct R&D on solid residue treatment alternatives, including salt distillation and magnetic separation
- Develop long-term storage packaging criteria for plutonium

CHICAGO

- Complete transition plans (e.g., budgets and schedules) needed to transfer 15 contaminated facilities from Defense Programs to Environmental Management

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IV. "BASE" PROGRAM AND "NEW SCOPE" PROGRAM

The Office of Nuclear Materials and Facilities Stabilization's budget distinguishes budget responsibilities for existing facilities (i.e., the Base Program) from newly acquired facilities (i.e., New Scope Program). This distinction is an important aspect of the transition process from other DOE Programs to provide safe stewardship and the necessary landlord services during transition.

The Base Program funds activities which began in previous budget years that continue into the FY 1996 budget request. This includes funding for ongoing activities at: the Rocky Flats Environmental Technology Center in Colorado, the Hanford Site in Richland, Washington, the Idaho Chemical Processing Plant in Idaho, the Idaho National Engineering Laboratory in Idaho, and the Oak Ridge Reservation in Tennessee.

The funding request for the Base Program is $769,730,000. This compares favorably with the adjusted appropriation of $765,517,000 in FY 1995.

The New Scope Program is directed toward the transfer of significant facilities from other DOE programs, primarily Defense Programs (DP). These DP facilities include: the Savannah River Site in South Carolina, the Mound Plant in Ohio, and the Pinellas Plant in Florida.

Facilities at other sites (Argonne National Laboratory, Brookhaven National Laboratory, Hanford Site, and Rocky Flats) are also included in the New Scope request. The total budget request for the New Scope program is $826,298,000.

V. PERFORMANCE BASED MANAGEMENT

The Office of Nuclear Materials and Facilities Stabilization achieved a major goal in 1995 by successfully structuring a performance based, Project Management process for stabilization activities. This approach clearly defines quantitative measures of cost, schedule and performance for stabilization projects. It employs sound project management and business practices, and profits from the "lessons-learned" from major government projects that have been incorporated into the process. This approach includes the following elements:

- Prioritization of all Stabilization and Landlord Activities
- Formal Project Management approach
- Objective Performance Measures

A. Prioritization of All Stabilization and Landlord Activities:

The Office of Nuclear Materials and Facilities Stabilization's FY 1996 Budget request was developed using a common prioritization method. The method allowed budget activities to be ranked and ordered by individual field offices and to be integrated by all activities over all sites. This process evaluated eight aspects of each activity, including: (1) whether or not it was a compliance requirement; (2) health and safety aspects; (3) environmental protection aspects; (4) legal drivers; (5) compliance with the Assistant Secretary for Environmental Management's mission goals; (6) the EM-60 performance measures; (7) other commitments and/or sound business judgment, and (8) projected cost savings. The prioritization method allowed detailed analysis of all activities by operations office, by category, and by Individual Activity Data Sheet number. All Base Program funds ($769,730,000) and those New Scope funds for the Hound and Pinellas sites were prioritized using this method. It was not performed for the Savannah River Site's new scope activities since the transfer was not complete.

The FY 1996 budget prioritization process validated the compliance basis for funded activities. Over 90 percent of the funded activities maintain a healthy and safe workplace for surplus activities. Over 80 percent is focused on minimizing significant impacts to the environment. All activities contribute to the Office of Environmental Management goals and are assessed with performance measures. This process has enabled management to state that the monies requested in the FY 1996 budget are justified, prioritized, and uniformly support our mission of facility stabilization and management.

B. Formal Project Management Approach:

A customized project management approach has been developed to formally structure all stabilization activities. This process produces clearly defined stabilization activities that possess start and completion dates, objective measures of project progress (i.e., cost, schedule and performance), and realistic estimates of total project cost. A thorough review of project end objectives is conducted to ensure the project is cost effective and supportive of the Department of Energy mission. The stabilization project development process described in this document was developed jointly by Headquarters and field organizations to provide a workable method for identifying stabilization projects and determining realistic costs and schedules.

The main mission of the Office of Nuclear Materials and Facilities Stabilization is to stabilize surplus facilities in a timely, cost effective, safe and fiscally responsible manner. Consequently, the stabilization project management process is not a rigid, bureaucratic approach to project management, but it is a dynamic, flexible approach that can respond to lessons learned and incorporate early, meaningful stakeholder involvement. Each stabilization project will present unique challenges and special programmatic needs; therefore, the project management approach must be flexible and responsive. This approach will also provide project managers with a common reference system for viewing, planning, and conducting stabilization activities.

The standardized stabilization project policies and requirements will also quantify the scope of the total stabilization challenge confronting the Office of Nuclear Materials and Facilities Stabilization and the Department of Energy.

C. Objective Performance Measures:

The performance measures developed by the Office Nuclear Materials and Facilities Stabilization in the FY 1995 Performance Plan will continue into FY 1996. They relate to DOE's ongoing commitment to address both urgent risks and health and safety issues across the nuclear weapons complex. The Government Performance and Results Act (GPRA) of 1993 requires all Federal agencies to establish performance plans in order to provide direct linkage between the longer-term goals outlined in each program's Strategic Plan and the work conducted by Federal managers on a daily basis.

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The following two specific performance measure formats were developed:

1. Increase the Number of Facilities Deactivated.

This performance indicator measures the total number of facilities at a particular site that will have completed the stabilization process by the end of the fiscal year. Progress toward this high-level measure will be assessed through the following contributing performance metrics:

- During FY 1995, the Office of Nuclear Materials and Facilities Stabilization will complete stabilization of seven facilities or buildings, and will make significant progress on nine other facilities. In addition, more than 23 stabilization projects will be formally-defined and placed under baseline monitoring in FY 1995.

2. Reduce Surveillance and Maintenance (S&M) Costs.

This performance measure captures the reduction of S&M dollars expended at a facility during the stabilization process. These savings are captured in the overall efficiency and performance improvement savings reflected in the budget submittal.

In addition, there are three Environmental Management-wide performance measures to monitor Productivity/Efficiency, Risk Reduction/Safety and Health, and Customer Satisfaction/Stakeholder Involvement. These affect all offices within the Environmental Management program.

Proposed FY 1996 performance measures are reflected in Section VI, Description of Program by Operations Office.

VI. DESCRIPTION OF PROGRAM BY OPERATIONS OFFICE

The Office of Nuclear Materials and Facilities Stabilization manages its activities through several operations offices widely distributed across the United States. Some of these sites are located near population centers. Over 95 percent of the budget request for 1996 will fund activities at the Rocky Flats Site in Colorado, the Idaho National Engineering Laboratory and Idaho Chemical Processing Plant in Idaho, the Hanford Site in Washington, and the Savannah River Site in South Carolina.

For each location, the major projected accomplishments for 1996, as well as the major accomplishments to date, are provided:

ROCKY FLATS

The Rocky Flats Plant is located 15 miles northwest of Denver, Colorado, on an 11 square mile site. The plant was used to shape plutonium, fabricate alloy, and operate conventional metal production processes. When operations ceased, large amounts of plutonium, plutonium compounds, and metallic residues remained in the production lines, tanks, and processes furnaces. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Drain 7,000 liters of plutonium solutions from tanks in Buildings 771 and 371 and continue precipitation and cementation activities

- Accelerate the treatment of 1,056 cubic yards of residues in over 7,000 containers and external tank systems

- Continue consolidation of Special Nuclear Materials

- Thermally stabilize 100 kilograms of pyrophoric plutonium oxides

- Convert 2,700 of nitrate solutions containing 570 kilograms of 93.2 percent highly enriched uranium to a solid stable form

- Perform 150,000 surveillances and 125,000 maintenance and operations support activities to safely store and handle over 12,600 kilograms of plutonium in 15 for weapon component manufacturing facilities

- Provide training; conduct of operations improvements; radiological technician support; criticality safety support; and occurrence reporting support

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- Provide utilities and services for the Rocky Flats Environmental Technology Site. Begin construction for the Underground Storage Tank project to replace 16 tanks and upgrade 6 tanks to comply with Resource Conservation Recovery Act requirements and avoid penalties of $5000 per tank/day

- Continue construction on the Plant Fire/Security System Replacement project to provide for replacement of existing security alarm and fire alarm systems

- Conduct an Environmental Monitoring Program (over 72,000 samples) including Air, Surface/Ground water monitoring, Soil Sampling and Chemical Tracking

- Initiate design for the Criticality Alarms and Plant Annunciation System project to replace the 45 year old communication system which is the backbone to Rocky Flats' plant-wide fire, security, and communication systems. When completed this system will save $5.4 million per year

Major accomplishments to date (1994-1995):

- Initiated shipment of low-level waste generated by Rocky Flats to the Nevada Test Site and continued shipments to Hanford

- Met goals of the contract reform initiative by contracting an integrating contractor and subcontractors in place of the standard Managing and Operating contract at the site

- Completed renegotiation of interagency agreement with the State of Colorado and the Environmental Protection Agency

- Continued cost productivity improvement program by achieving $70 million total savings

- Transferred plutonium pit surveillance program to Los Alamos National Laboratory

- Completed comprehensive waste management plan for potential reuse of existing facilities for waste storage as required by Federal Facilities Compliance Agreement

- Completed solidification of 385 bottles of dilute plutonium solutions in Building 771

- Completed environmental assessment for Phase-II liquid stabilization activities in Buildings 771 and 371

- Completed environmental assessment and initiated thermal stabilization of plutonium materials for improved safe storage of material

- Initiated accelerated treatment of plutonium residues

- Initiated economic conversion of a facility at Rocky Flats under the National Conversion Pilot Program

- Completed transfer of non-nuclear production to Kansas City

- Initiated the consolidation of special nuclear material into Building 371

- Completed inspection and repackaging of special nuclear material

- Completed identification of Rocky Flats facilities that can be safely taken out-of-service

- Initiated site-wide Environmental Impact Statement (EIS) preparation

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TOTAL FUNDING BY INSTALLATION - ROCKY FLATS
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Rocky Flats Field Office, Colorado	$ 11,386	$ 14,036	$ 18,000
Rocky Flats Plant, Colorado	213,730	346,990	375,804
TOTAL, ROCKY FLATS	$ 225,116	$ 361,026	$ 393,804

RICHLAND

The Richland Operations Office oversees activities at the Hanford Site located near Richland, Washington. The Site occupies 560 square miles along the Columbia River in southeastern Washington. Since the early 1940's, nuclear reactors and process canyons were used to recover uranium and plutonium for the manufacture of weapons related nuclear materials. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Stabilize PUREX N-Cell leading to complete shutdown by 1998
- Remove 2,700 kilograms of spent nuclear fuel from the Plutonium Uranium Extraction (PUREX)
- Reduce number of weekly surveillances at PUREX from 5,000 to 4,500 (8 percent)
- Assess and reduce the contaminated area by 80,000 square feet at PUREX
- Conduct 4,500 surveillances per week at PUREX to assess the condition of 480,000 square feet of floor space, 80,000 square feet of which are contaminated, and 79,590 liters of organic solutions
- Complete transfer of 947,500 liters of surplus uranium contaminated nitric acid
- Consolidate ventilation controls at PUREX from 11 to 1 and initiate consolidation of the Canyon heating, ventilation, and air conditioning (HVAC) systems
- Conduct surveillances at the Plutonium Finishing Plant to assess the condition of contaminated areas, 24,000 kilograms of Pu-bearing materials, 18,950 liters of nitric acid, 9,475 liters of carbon tetrachloride, 37,900 liters of aluminum nitrate and other residual process chemicals
- Reduce surveillance and maintenance of 1,000 kilograms of plutonium bearing material at the Plutonium Finishing Plant
- Complete RCRA closure of Building 303K Storage Facility
- Complete cleanup of Building 303-F
- Complete construction of the replacement facility for the 300-Area process sewer
- Complete public review and comment on the Environmental Impact Statement for stabilization of remaining unstable plutonium-bearing materials at PFP
- Complete construction of the multi-purpose fabrication/repair facility

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Major accomplishments achieved to date (1994-1995):

- PUREX/UO3 Plant:
  - -- Completed deactivation of UO3 Plant
  - -- Completed 20 percent of the PUREX Deactivation project
  - -- Initiated fuel transfer from PUREX
  - -- Reduced contaminated area by 420,000 square feet
  - -- Flushed 67 vessels formerly used to process uranium and plutonium
  - -- Transferred 348,680 liters of uranium contaminated nitric acid
  - -- Transferred 22,740 liters of solutions containing 9 kilograms of plutonium
  - -- Completed cleanout of 9 gloveboxes in N Cell, Q Cell and the PR room
  - -- Deactivated 1,922 instruments and control panels

- Plutonium Finishing Plant:
  - -- Initiated EIS for Plutonium Finishing Plant stabilization/shutdown
  - -- Remediated the plutonium bearing ductwork in seismically unstable Plutonium Finishing Plant support facility
  - -- Removed loose contamination from 110,000 square feet of space
  - -- Completed thermal stabilization of approximately 236 items of reactive scrap containing 23 kilograms of plutonium
  - -- Completed transloading solutions from 27 10-L containers to poly bottles for safer environmental storage
  - -- Purchased plutonium thermal stabilization equipment, mass spectrometer, non-destructive analysis equipment, and replacement parts for the Plutonium Finishing Plant
  - -- Completed the 291-Z closed loop cooling system, the C132 hazardous material storage, and the 291-Z panel board upgrade
  - -- Completed PFP waste disposal and drainage containment projects
  - -- Cemented 30 items of low plutonium content reactive scrap stored as sludge to reduce dose by 24 mrem per year
  - -- Downloaded 250 liters of organic solution and 1,500 liters of aqueous plutonium-bearing solution
  - -- Removed 10 kilograms of plutonium from glovebox bays and canyon floors

- 300 Area:
  - -- Completed Building 304 concretion which included activities such as: excessed 3,676 liters of solvent waste materials and removed 92 drums of contaminated pyrophoric waste
  - -- Initiated deactivation at the 303-K and 333 Building
  - -- Completed closure of 300 Area Solvent Evaporator and 304 Facility
  - -- Provided surveillance and maintenance for 12 non-reactor facilities

- Demolished 10 non-process contaminated surplus facilities (53,500 square feet)

- Completed Phase I of the electrical distribution system upgrade (current system presents serious safety liabilities)

- Completed all corrective actions associated with recent steam system accident

- Inspected and analyzed 2 million square feet of facilities and prioritized the remaining 4,460,000 square feet of facilities at the Hanford Site

- Replaced 211,916 square feet of roof plus roofs of Buildings 282EA, 318, 384, 190X and other smaller buildings

- Provided grant monies to the States of Washington and Oregon for environmental management issues, emergency planning/preparedness, and waste transportation

- Provided grants to the Indian Nations (Umatilla, Yakama, and Nez Perce Nations) for emergency preparedness, training, and development of resource information to ensure their meaningful involvement in the planning and activities at Hanford

2388

- Operated the Hanford Filter Test Facility to test High Efficient Particulate Air Filters

- Procured penetrometer necessary to support the Hanford Filter Test Facility

TOTAL FUNDING BY INSTALLATION - RICHLAND
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Pacific Northwest Laboratory, Washington	$ 3,500	$ 1,000	$ 0
Hanford Site, Washington	204,319	214,612	168,023
Richland Operations Office, Washington	26,013	26,669	58,584
TOTAL, RICHLAND	$ 233,832	$ 242,281	$ 226,607

IDAHO

The Idaho National Engineering Laboratory (INEL), established in 1949 as the National Reactor Testing Station, is situated on more than 890 square miles of the Snake River Plain in southeastern Idaho. Over the years, 52 reactors have been constructed and operated at the INEL. There are nine primary facilities at the INEL as well as administrative, engineering, and research laboratories in Idaho Falls, approximately 50 miles east of the site. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments.

- Initiate deactivation of the ROVER Dry End Process including the removal of up to 150 kilograms of uranium in graphite ash from the process

- Complete definitive design for deactivation of the calcine cell within the Old Waste Calcining Facility

- Operate and maintain 30 utility systems, 453 major pieces of equipment and provide 40,000 lb/hour of steam to support the Environmental Management mission at the Idaho Chemical Processing Plant

- Initiate design of replacement Health Physics Instrumentation Laboratory at INEL

- Complete construction of Fire Life Safety System upgrades at the Radioactive Waste Management Complex (RWMC) and Idaho Falls facilities

- Continue construction of the Security Facility Life Cycle Replacement project to reduce annual security expenditures of $2.5 million

- Complete construction of the INEL Electrical Upgrade

Major accomplishments to date (1994-1995):

- Annual activities at the Idaho Chemical Processing Plant (ICPP)
  - -- Tested, calibrated, and maintained 900 radiological instruments and dosimeters
  - -- Organized and controlled 8,000 corrective and 2,200 preventative maintenance procedures
  - -- Maintained 3 Criticality Alarm Systems covering 10 areas with over 50 detectors
  - -- Operated and maintained 30 utility systems and 453 major items of equipment

- Completed uranium accountability for deactivation facilities

- Completed conceptual design for ROVER uranium removal

2389

- Demolished 6 surplus buildings at the Test Area North and Central Facilities Area
- Provided surveillance and maintenance activities for 10 surplus radioactively contaminated facilities
- Completed the deactivation of the second and third cycle extraction processes
- Completed the deactivation of the denitrator process stabilizing 12,000 liters of liquid uranium inventories
- Completed equipment flushing and disposition of surplus chemicals in the Fluorine Dissolution Process
- Completed deactivation of the CPP-601 and CPP-602 main reprocessing facilities including uranium accountability

TOTAL FUNDING BY INSTALLATION - IDAHO
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Idaho National Engineering Laboratory, Idaho	$ 43,668	$ 48,354	$ 53,775
Idaho Chemical Processing Plant, Idaho	83,248	88,451	95,769
Idaho Operations Office, Idaho	9,810	10,450	4,468
TOTAL, IDAHO	$ 136,726	$ 147,255	$ 154,012

SAVANNAH RIVER

The Savannah River Operations Office oversees activities at the Savannah River Site located 11 miles south of Aiken, South Carolina, and 13 miles southeast of Augusta, Georgia. The site covers 325 square miles along the Savannah River. The Site's six nuclear reactors and 2 process canyons produced nuclear materials as part of the DOE weapons complex. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Complete stabilization of the F-Canyon plutonium-239 solution. The solution will be converted to metal
- Complete stabilization of the H-Canyon plutonium-242 solution. The solution will be converted to an oxide
- Complete processing of the Mk-31 targets. The targets will be converted into solid forms suitable for safe interim storage
- Complete deinventory and shutdown of the fuel fabrication facilities in H-Area
- Complete post-Cassini plutonium-238 processing

Major accomplishments to date (1994-1995):

This is the first year the Site's mission is reflected in the Environmental Management budget. Therefore, no major environmental remediation or hazardous waste stabilization accomplishments have been achieved.

2390

TOTAL FUNDING BY INSTALLATION - SAVANNAH RIVER
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Westinghouse Savannah River Company, South Carolina	$ 0	$ 514	$ 653,959
Savannah River Operations Office, South Carolina	0	0	32,187
TOTAL, SAVANNAH RIVER	$ 0	$ 514	$ 686,146

OAK RIDGE

The Oak Ridge Operations Office manages the Oak Ridge National Laboratory, the Y-12 Plant, and the surplus enrichment plants at Oak Ridge, Tennessee and the surplus high assay enrichment plant at Portsmouth, Ohio. The Oak Ridge Reservation is located 20 miles west of Knoxville, in eastern Tennessee. Many of the facilities are contaminated and require continuous monitoring to assure public protection from unplanned releases. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishment:

- Prepare a baseline for 19 surplus facilities at the Oak Ridge National Laboratory

TOTAL FUNDING BY INSTALLATION - OAK RIDGE
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Oak Ridge Operations Office, Tennessee	$ 0	$ 0	$ 201
K-25 Site, Tennessee	0	0	630
TOTAL, OAK RIDGE	$ 0	$ 0	$ 831

OHIO

Activities conducted at the Mound Plant are managed by the Ohio Field Office. The plant was part of the nuclear weapons complex until 1994. The plant supported production, processing, and testing of weapons components. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishment:

- Stabilize and repackage plutonium currently stored without High-Efficiency Particulate Air (HEPA) filtration system in T-Building at the Mound Plant

TOTAL FUNDING BY INSTALLATION - OHIO
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Mound Plant, Ohio	$ 0	$ 349	$ 53,821
Ohio Field Office, Ohio	0	0	3,698
TOTAL, OHIO	$ 0	$ 349	$ 57,519

ALBUQUERQUE

The Albuquerque Operations Office manages seven sites in five states. The Office of Nuclear Materials and Facilities Stabilization coordinates stabilization activities with the Albuquerque Operations Office at two of the seven sites. These include the Pinellas site in Florida, and Los Alamos in New Mexico.

The Pinellas Plant is located about 6 miles from the City of St. Petersburg, Florida, on a 96.5 acre site. The plant produced neutron generators, miniaturized linear accelerators, and other components for nuclear weapon production.

The Los Alamos National Laboratory (LANL) is a transuranic waste generator; it is responsible for certifying and storing transuranic waste on site. LANL treats some hazardous waste on site and design is underway on a hazardous waste treatment facility.

In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Complete disposition of former Defense Program equipment at the Pinellas Plant
- Complete disposition of classified parts and records at the Pinellas Plant
- Provide research and development (R&D), engineering, safety analysis, procedures, and training support for the plutonium liquids stabilization effort at Rocky Flats
- Conduct R&D on solid residue treatment alternatives, including salt distillation and magnetic separation
- Develop long-term storage packaging criteria for plutonium

TOTAL FUNDING BY INSTALLATION - ALBUQUERQUE
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Pinellas Plant, Florida	$ 0	$ 349	$ 46,352
Los Abamos National Laboratory, New Mexico	0	0	6,824
Albuquerque Operations Office, New Mexico	0	330	3,264
TOTAL, ALBUQUERQUE	$ 0	$ 679	$ 56,440

2392

CHICAGO

The Chicago Operations Office manages the Office of Nuclear Materials and Facilities Stabilization activities at Argonne National Laboratory (East) and Brookhaven National Laboratory. Both of these facilities conduct research supporting nuclear weapons projects. Many of the facilities at these laboratories are contaminated and require continuous monitoring to prevent a release. In FY 1996, the Office of Nuclear Materials and Facilities Stabilization will complete the following accomplishments:

- Complete transition plans (e.g., budgets and schedules) needed to transfer 15 contaminated facilities from Defense Programs to Environmental Management

TOTAL FUNDING BY INSTALLATION - CHICAGO
($ in Thousands)

Site	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Argonne National Laboratory-East, Illinois	$ 0	$ 0	$ 144
Brookhaven National Laboratory, New York	0	0	124
Chicago Operations Office, Illinois	0	0	192
TOTAL, CHICAGO	$ 0	$ 0	$ 460

VII. FISCAL YEAR 1996 BUDGET STRUCTURE

The Office of Nuclear Materials and Facilities Stabilization's budget is structured in two appropriations. The first appropriation, the Defense Environmental Restoration and Waste Management, focuses on activities related to the management and stabilization of weapons. The second appropriation, Energy Supply, Research and Development, focuses on DOE activities independent of the weapons related program.

Within each appropriation, the Office of Nuclear Materials and Facilities Stabilization accomplishes its mission by funding activities through various categories. The Defense Environmental Restoration and Waste Management categories fund activities in the following six categories:

1. Program Integration:

   Funds all activities that accomplish transition program and deactivation project planning. This includes all actions associated with transferring Defense and other facilities to EM, with the exception of landlord-related functions and deactivation project design efforts. This category focuses on the planning, development and generation of transition program and deactivation project documentation and plans.

2. Surveillance and Maintenance:

   Funds all activities that maintain surplus and transferred buildings with required functions (i.e., surveillance and maintenance of fire, safety and life support systems, building support and essential services as specified by Operational Safety Requirements). This category includes system/facility monitoring, corrective and preventive maintenance.

3. Deactivation/Compliance Actions:

   Funds all activities that remove surplus materials, chemicals, and supplies to stabilize contamination, including removal of hazardous, mixed and radioactive wastes. These actions are undertaken to reduce the cost of surveillance and maintenance and hazardous material stabilization.

4. Landlord:

Funds all activities that support overall infrastructure costs where the Office of Nuclear Materials and Facilities Stabilization has been designated Landlord. Included are general hotel services that are not facility or program specific.

5. Program Direction:

Funds all costs that maintain the Federal staff at DOE Headquarters and each field organization.

6. Program Support:

Funds all activities that provide technical support and contract expertise to assist the federal staff with its line management and oversight functions.

In FY 1996 the Nuclear Materials and Facilities Stabilization's budget reflects a scope of work utilizing prior year uncosted balances.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Nuclear Materials and Facilities Stabilization

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Program Integration					
Operating Expenses	$ 18,474	$ 31,545	$ -1,955	$ 29,590	$ 63,269
Capital Equipment	0	0	0	0	30
Subtotal, Program Integration	$ 18,474	$ 31,545	$ -1,955	$ 29,590	$ 63,299
Surveillance and Maintenance					
Operating Expenses	$ 141,369	$ 268,369	$ -1,509	$ 266,860	$ 533,522
Capital Equipment	300	250	0	250	7,457
Construction	200	900	0	900	1,754
Subtotal, Surveillance and Maintenance	$ 141,869	$ 269,519	$ -1,509	$ 268,010	$ 542,733
Deactivation/Compliance Actions					
Operating Expenses	$ 106,976	$ 126,730	$ -1,862	$ 124,868	$ 207,355
Capital Equipment	0	0	0	0	1,364
Subtotal, Deactivation/Compliance Actions	$ 106,976	$ 126,730	$ -1,862	$ 124,868	$ 208,719
Landlord					
Operating Expenses	$ 150,092	$ 139,631	$ -1,501	$ 138,130	$ 368,881
Capital Equipment	19,888	18,592	0	18,592	43,523
Construction	72,886	76,236	-623	75,613	126,890
Subtotal, Landlord	$ 242,866	$ 234,459	$ -2,124	$ 232,335	$ 539,294
Program Direction					
Operating Expenses	$ 52,879	$ 56,669	$ 0	$ 56,669	$ 97,124
Capital Equipment	0	105	0	105	178
Subtotal, Program Direction	$ 52,879	$ 56,774	$ 0	$ 56,774	$ 97,302
Program Support					
Operating Expenses	$ 47,255	$ 53,940	$ 0	$ 53,940	$ 143,836
Capital Equipment	25	0	0	0	845

2395

LEAD TABLE - Nuclear Materials and Facilities Stabilization (cont'd)

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Subtotal, Program Support	$ 47,280	$ 53,940	$ 0	$ 53,940	$ 144,681
Subtotal, Nuclear Materials and Facilities Stabilization (Defense)	$ 610,344	$ 772,967	$ -7,450	$ 765,517	$ 1,596,028
Adjustment: Productivity Savings	0	-5,000	+5,000	0	0
TOTAL	$ 610,344	$ 767,967	$ -2,450*	$ 765,517	$ 1,596,028
Summary					
Operating Expenses	$ 517,045	$ 676,884	$ -6,827	$ 670,057	$ 1,413,987
Capital Equipment	20,213	18,947	0	18,947	53,397
Construction	73,086	77,136	-623	76,513	128,644
Subtotal Program	$ 610,344	$ 772,967	$ -7,450	$ 765,517	$ 1,596,028
Adjustment: Productivity Savings	0	-5,000	+5,000	0	0
Total Program	$ 610,344	$ 767,967	$ -2,450*	$ 765,517	$ 1,596,028
Staffing (FTE's)	338	724	0	724	1,060

*Procurement Reform adjustment.

2396

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Nuclear Materials and Facilities Stabilization

FY 1995 Appropriation	$ 767,967
- Adjustment - Procurement Reform Offset	-2,450
FY 1995 Adjusted	$ 765,517
- Transfer	0
FY 1995 Comparable	$ 765,517

Program Integration*

- Provides for development of site-specific transition plans and conduct budgetary planning activities for surplus, contaminated facilities at Chicago, Pinellas, Oak Ridge, Rocky Flats, Mound, and Savannah River	$ +330
- Increase to continue environmental compliance, engineering and quality assurance in the environmental and management programs at the Idaho Chemical Processing Plant	+2,365
- Continue to provide programmatic support for the Plutonium Finishing Plant, PUREX, 300 Area Fuel Supply shutdown and UO3 plant; provide technical and administrative support for safeguards and security activities at Richland	$ +1,331
- Increase to implement and integrate transition activity to support management of sites transferring from Defense Programs (Mound, Pinellas and Savannah River)	$ +29,683

Surveillance and Maintenance*

- Provide for high ranking Surplus Facility Inventory and Assessment assets at Los Alamos National Laboratory	$ +224
- At a reduced level of effort continue surveillance and maintenance to assure that the safety envelope (surveillance of safety controls, maintenance of fire, safety and life support systems, systems/facility monitoring, etc.) is maintained at Rocky Flats and Idaho	$ -7,838
- Decrease in level of effort to maintain required safety, health and environmental programs for the PUREX plant, Plutonium Finishing Plant (PFP) at Richland; reduction in General Plant Projects; provide support for upgrade of the PFP Safeguards and Security systems	$ -12,470
- Increase to implement and integrate transition activity to support management of sites transferring from Defense Programs (Mound, Pinellas and Savannah River)	$ +294,807

* The Office of Nuclear Materials and Facilities Stabilization's budget distinguishes responsibilities for existing facilities (Base Program) and newly acquired facilities (New Scope Program) which are transitioning from Defense Programs in FY 1996. Therefore, a major increase in funding from FY 1995 to FY 1996 is reflected in the budget.

2397

SUMMARY OF CHANGES · Office of Nuclear Materials and Facilities Stabilization (cont'd)

Deactivation/Compliance Actions*	
· Provides funding to support site-wide cleanup of buildings and systems at Idaho	+3,210
· Continue to characterize and transport waste materials from the 300 Area Fuel Supply buildings; continue PUREX deactivation; support pollution prevention and waste minimization activities at Richland	+14,725
· Decreased effort in supporting plutonium consolidation, residue elimination and liquid stabilization activities at Rocky Flats	-11,552
· Initiate a program at Los Alamos National Laboratory to provide for the liquid plutonium liquid stabilization effort at Rocky Flats	+6,600
· Increase to implement and integrate transition activity to support management of sites transferring from Defense Programs (Mound, Pinellas and Savannah River)	+70,868
Landlord*	
· At a reduced level-of-effort continue support of infrastructure, core landlord services, real property management and maintenance to keep the site in a safe and responsible manner to be in compliance with DOE Orders and laws at Richland	-21,573
· Funding provided to support health and safety initiatives, environmental mission, CAMP/CAS activities and sitewide landlord services (emergency preparedness, environmental monitoring, site planning, etc.) at Idaho	+11,562
· Supports infrastructure services (upkeep of roads, maintenance of bridges, safety services, upkeep of buildings, etc.); provides up-front planning and operations support for infrastructure capital equipment and General Plant Projects at Rocky Flats	+25,256
· Increase to implement and integrate transition activity to support management of sites transferring from Defense Programs (Mound, Pinellas and Savannah River)	+291,714
Program Support*	
· Initiate conversion of the SFIA database with the Field Management's Condition Assessment Inventory System	+1,707
· Provides for oversight activities, technical expertise to support the Office of Nuclear Materials and Facilities Stabilization at Headquarters and Albuquerque	+2,300
· Supports service contractor activities, downwinders trial preparation; provides funding to the States of Washington and Oregon for participation in planning activities and to support increased requirements for RCRA compliance, and tribal and State grants at Richland	+282
· Provides for Economic Transition at Richland	+2,000
· Supports litigation activities and the "Agreement in Principle" between the DOE and the State of Colorado for State activities at Rocky Flats	+19,350
· Provides support for technical and administrative personnel in ensuring safe facility operations and compliance with Federal, State and DOE requirements; supports a program of natural resource management and research at Savannah River Site	+65,102

* The Office of Nuclear Materials and Facilities Stabilization's budget distinguishes responsibilities for existing facilities (Base Program) and newly acquired facilities (New Scope Program) which are transitioning from Defense Programs in FY 1996. Therefore, a major increase in funding from FY 1995 to FY 1996 is reflected in the budget.

2398

SUMMARY OF CHANGES - Office of Nuclear Materials and Facilities Stabilization (cont'd)

Program Direction*

· Provides for additional full-time employees due to the transfer of programs at Pinellas, Mound, Savannah River and Headquarters	+40,441
· Includes direct and indirect base program costs (salaries, benefits, personal compensation and travel) to maintain the Federal staff at various sites	+87
FY 1996 Congressional Budget Request	$ 1,596,028

* The Office of Nuclear Materials and Facilities Stabilization's budget distinguishes responsibilities for existing facilities (Base Program) and newly acquired facilities (New Scope Program) which are transitioning from Defense Programs in FY 1996. Therefore, a major increase in funding from FY 1995 to FY 1996 is reflected in the budget.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Nuclear Materials and Facilities Stabilization (Defense)

Field Office	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Albuquerque Operations Office					
Albuquerque Operations Office	$ 0	$ 330	$ 0	$ 330	$ 3,264
Los Alamos National Laboratory	0	0	0	0	6,824
Pinellas Plant	0	349	0	349	46,352
Total Albuquerque Operations Office	$ 0	$ 679	$ 0	$ 679	$ 56,440
Chicago Operations Office					
Chicago Operations Office	$ 0	$ 0	$ 0	$ 0	$ 192
Argonne National Laboratory	0	0	0	0	144
Brookhaven National Laboratory	0	0	0	0	124
Total Chicago Operations Office	$ 0	$ 0	$ 0	$ 0	$ 460
Headquarters	$ 14,670	$ 12,899	$ 0	$ 12,899	$ 19,674
Idaho Operations Office					
Idaho Operations Office	$ 9,810	$ 10,450	$ 0	$ 10,450	$ 4,468
Idaho Chemical Processing Plant	83,248	88,751	-300	88,451	95,769
Idaho National Engineering Laboratory	43,668	48,977	-623	48,354	53,775
Total Idaho Operations Office	$ 136,726	$ 148,178	$ -923	$ 147,255	$ 154,012
Oakland Operations Office					
Oakland Operations Office	$ 0	$ 514	$ 0	$ 514	$ 535

2400

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Nuclear Materials and Facilities Stabilization (Defense)

Field Office	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Oak Ridge Operations Office					
Oak Ridge Operations Office	$ 0	$ 0	$ 0	$ 0	$ 201
K-25 Site	0	0	0	0	630
Total Oak Ridge Operations Office	$ 0	$ 0	$ 0	$ 0	$ 831
Ohio Field Office					
Mound Plant	$ 0	$ 349	$ 0	$ 349	$ 53,821
Ohio Field Office	0	0	0	0	3,698
Total Ohio Field Office	$ 0	$ 349	$ 0	$ 349	$ 57,519
Richland Operations Office					
Pacific Northwest Laboratory	$ 3,500	$ 1,000	$ 0	$ 1,000	$ 0
Richland Operations Office	26,013	26,669	0	26,669	58,584
Hanford Site	204,319	216,547	-1,935	214,612	168,023
Total Richland Operations Office	$ 233,832	$ 244,216	$ -1,935	$ 242,281	$ 226,607
Rocky Flats Field Office					
Rocky Flats Field Office	$ 11,386	$ 14,036	$ 0	$ 14,036	$ 18,000
Rocky Flats Plant	213,730	351,582	-4,592	346,990	375,804
Total Rocky Flats Field Office	$ 225,116	$ 365,618	$ -4,592	$ 361,026	$ 393,804

2401

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Nuclear Materials and Facilities Stabilization (Defense)

Field Office	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Savannah River Operations Office					
Savannah River Site	$ 0	$ 514	$ 0	$ 514	$ 653,959
Savannah River Operations Office	0	0	0	0	32,187
Total Savannah River Operations Office	$ 0	$ 514	$ 0	$ 514	$ 686,146
Subtotal - Nuclear Materials and Facilities Stabilization (Defense)	$ 610,344	$ 772,967	$ -7,450	$ 765,517	$1,596,028
Adjustment: Productivity Savings	$ 0	$ -5,000	$ 5,000	$ 0	$ 0
Total	$ 610,344	$ 767,967	$ -2,450	$ 765,517	$1,596,028

2402

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

BASE PROGRAM / NEW SCOPE

Nuclear Materials and Facilities Stabilization (Defense)

SUMMARY	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Program Integration	$ 18,474	$ 31,545	$ -1,955	$ 29,590	$ 63,299
Surveillance and Maintenance	141,869	269,519	-1,509	268,010	542,733
Deactivation/Compliance Actions	106,976	126,730	-1,862	124,868	208,719
Landlord	242,866	234,459	-2,124	232,335	539,294
Program Support	47,280	53,940	0	53,940	144,681
Program Direction	52,879	56,774	0	56,774	97,302
Total - Nuclear Materials and Facilities Stabilization (Defense)	$ 610,344	$ 772,967	$ -7,450	$ 765,517	$1,596,028
Adjustment: Productivity Savings	0	-5,000	5,000	0	0
Total	$ 610,344	$ 767,967	$ -2,450	$ 765,517	$1,596,028
BASE PROGRAM					
Program Integration	$ 18,474	$ 31,545	$ -1,955	$ 29,590	$ 32,307
Surveillance and Maintenance	141,869	269,519	-1,509	268,010	226,066
Deactivation/Compliance Actions	106,976	126,730	-1,862	124,868	131,251
Landlord	242,866	234,459	-2,124	232,335	247,580
Program Support	47,280	53,940	0	53,940	75,857
Program Direction	52,879	56,774	0	56,774	56,669
Total Base Program	$ 610,344	$ 772,967	$ -7,450	$ 765,517	$ 769,730
Adjustment: Productivity Savings	0	-5,000	5,000	0	0
Total	$ 610,344	$ 767,967	$ -2,450	$ 765,517	$1,596,028
NEW SCOPE					
Program Integration	$ 0	$ 0	$ 0	$ 0	$ 30,992
Surveillance and Maintenance	0	0	0	0	316,667
Deactivation/Compliance Actions	0	0	0	0	77,468
Landlord	0	0	0	0	291,714
Program Support	0	0	0	0	68,824
Program Direction	0	0	0	0	40,633
Total New Scope	$ 0	$ 0	$ 0	$ 0	$ 826,298

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

Nuclear Materials and Facilities Stabilization (Defense)

Field Office	FY 1996 Base	FY 1996 New Scope	FY 1996 Total
Albuquerque Operations Office (Pinellas Plant, Los Alamos National Laboratory)	708	55,732	56,440
Chicago Operations Office (Argonne National Laboratory, Brookhaven National Laboratory)	0	460	460
Headquarters	16,317	3,357	19,674
Idaho Operations Office (Idaho National Engineering Laboratory, Idaho Chemical Processing Plant)	154,012	0	154,012
Oak Ridge Operations Office (Oak Ridge National Laboratory, K-25 Site)	831	0	831
Oakland Operations Office	535	0	535
Ohio Field Office (Mound Plant)	365	57,154	57,519
Richland Operations Office (Hanford Site, Pacific Northwest Laboratory)	217,430	9,177	226,607
Rocky Flats Field Office (Rocky Flats Plant)	378,304	15,500	393,804
Savannah River Operations Office (Savannah River Site)	1,228	684,918	686,146
Total - Nuclear Materials and Facilities Stabilization (Defense)	$769,730	$826,298	$1,596,028

2404

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

INSTALLATION FUNDING

Nuclear Materials and Facilities Stabilization (Defense)

Summary	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Albuquerque Operations Office	0	330	3,264
Los Alamos National Laboratory	0	0	6,824
Pinellas Plant	0	349	46,352
Chicago Operations Office	0	0	192
Argonne National Laboratory	0	0	144
Brookhaven National Laboratory	0	0	124
Headquarters	14,670	12,899	19,674
Idaho Operations Office	9,810	10,450	4,468
Idaho Chemical Processing Plant	83,248	88,451	95,769
Idaho National Engineering Laboratory	43,668	48,354	53,775
Oakland Operations Office	0	514	535
Oak Ridge Operations Office	0	0	201
Oak Ridge K-25 Site	0	0	630
Mound Plant	0	349	53,821
Ohio Field Office	0	0	3,698
Richland Operations Office	26,013	26,669	58,584
Pacific Northwest Laboratory	3,500	1,000	0
Hanford Site	204,319	214,612	168,023
Rocky Flats Field Office	11,386	14,036	18,000
Rocky Flats Plant	213,730	346,990	375,804
Savannah River Site	0	514	653,959
Savannah River Operations Office	0	0	32,187
Total - Nuclear Materials and Facilities Stabilization (Defense)	$610,344	$765,517	$1,596,028

2405

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

INSTALLATION FUNDING

Nuclear Materials and Facilities Stabilization (Defense)

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Operating Expenses			
Albuquerque Operations Office	0	330	3,264
Los Alamos National Laboratory	0	0	6,824
Pinellas Plant	0	349	43,537
Chicago Operations Office	0	0	192
Argonne National Laboratory	0	0	144
Brookhaven National Laboratory	0	0	124
Headquarters	14,670	12,899	19,674
Idaho Operations Office	9,810	10,450	4,468
Idaho Chemical Processing Plant	78,650	83,777	79,014
Idaho National Engineering Laboratory	7,741	11,552	17,832
Oakland Operations Office	0	514	535
Oak Ridge Operations Office	0	0	201
Oak Ridge K-25 Site	0	0	600
Mound Plant	0	349	51,436
Ohio Field Office	0	0	3,698
Richland Operations Office	26,013	26,669	58,584
Hanford Site	174,112	179,535	148,840
Rocky Flats Field Office	11,386	14,036	18,000
Rocky Flats Plant	194,663	329,083	342,904
Savannah River Site	0	514	581,929
Savannah River Operations Office	0	0	32,187
Total Operating Expenses	$517,045	$670,057	$1,413,987

2406

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

INSTALLATION FUNDING

Nuclear Materials and Facilities Stabilization (Defense)

	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
Capital Equipment			
Idaho Chemical Processing Plant	2,298	1,346	286
Idaho National Engineering Laboratory	9,281	6,920	8,212
Oak Ridge K-25 Site	0	0	30
Hanford Site	3,267	9,855	9,769
Rocky Flats Plant	5,367	826	5,100
Savannah River Site	0	0	30,000
Total Capital Equipment	$20,213	$18,947	$53,397
Construction			
Pinellas Plant	0	0	2,815
Idaho Chemical Processing Plant	2,300	3,328	16,469
Idaho National Engineering Laboratory	26,646	29,882	27,731
Mound Plant	0	0	2,385
Pacific Northwest Laboratory	3,500	1,000	0
Hanford Site	26,940	25,222	9,414
Rocky Flats Plant	13,700	17,081	27,800
Savannah River Site	0	0	42,030
Total Construction	$73,086	$76,513	$128,644
Total - Nuclear Materials and Facilities Stabilization (Defense)	$610,344	$765,517	$1,596,028

2407

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Program Integration

The Program Integration category funds all activities that accomplish transition program and deactivation project planning. This includes all actions associated with transferring surplus contaminated facilities to Environmental Management, with the exception of landlord-related functions and deactivation project design efforts. This category focuses on the planning, development and generation of transition programs and deactivation project documentation and plans.

Specific activities funded within this category include:

- Development of site integration plans
- Implementing and integrating transition activity plans
- Transition program management, to include: activity data sheet generation, project management, quality assurance, program and budget planning, scheduling, cost estimating, identification of environmental support requirements, record control, and characterization activities
- Developing necessary program documents, such as procedures, performance standards, performance measures, etc.
- Development of deactivation project planning documentation, including the Project Execution Plan (PEP) and the project requirements document

2408

II. A. Summary Table: Program Integration

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ALBUQUERQUE				
Pinellas Plant	$ 0	$ 349	$ 1,000	$ 651
Subtotal, ALBUQUERQUE	$ 0	$ 349	$ 1,000	$ 651
CHICAGO				
Argonne National Laboratory - East	$ 0	$ 0	$ 144	$ 144
Brookhaven National Laboratory	0	0	124	124
Subtotal, CHICAGO	$ 0	$ 0	$ 268	$ 268
IDAHO	$ 7,253	$ 21,422	$ 23,787	$ 2,365
OAK RIDGE				
K-25 Site				
Operating Expenses	0	0	600	600
Capital Equipment	0	0	30	30
Subtotal, K-25 Site	$ 0	$ 0	$ 630	$ 630
Subtotal, OAK RIDGE	$ 0	$ 0	$ 630	$ 630
OAKLAND	$ 0	$ 514	$ 0	$ -514
OHIO				
Mound Plant	0	349	7,394	7,045
Subtotal, OHIO	$ 0	$ 349	$ 7,394	$ 7,045
RICHLAND	$ 6,983	$ 5,642	$ 6,973	$ 1,331
ROCKY FLATS	4,238	800	0	-800
SAVANNAH RIVER	0	514	23,247	22,733
Total, Program Integration	$ 18,474	$ 29,590	$ 63,299	$ 33,709

2409

II. B. Laboratory and Facility Funding Table: Program Integration

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Argonne National Lab (East)	$ 0	$ 0	$ 144	$ 144
Brookhaven National Lab	0	0	124	124
Hanford Site	6,983	5,642	6,973	1,331
Idaho Chemical Processing Plant	2,447	21,422	23,787	2,365
Idaho National Engineering Lab	4,806	0	0	0
K-25 Site	0	0	630	630
Mound Plant	0	349	7,394	7,045
Oakland Operations Office	0	514	0	-514
Pinellas Plant	0	349	1,000	651
Rocky Flats Plant	4,238	800	0	-800
Savannah River Site	0	514	23,247	22,733
Total, Program Integration	$ 18,474	$ 29,590	$ 63,299	$ 33,709

2410

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Integration			
ALBUQUERQUE			
Pinellas Plant	Activities were funded by Defense Programs (DP).	Conduct transition activities for surplus DP facilities and affected infrastructure as identified in a Pinellas site-specific transition plan. Planning will address worker retraining/reemployment, facility reuse/economic development, and stakeholder concerns.	Conduct transition activities for surplus DP facilities and affected infrastructure as identified in a Pinellas site-specific transition plan. Planning will address stakeholder concerns. ($365)
	No activity.	No activity.	Complete additional planning activities required to support the accelerated transfer of all DOE activities from the site by the end of FY 1997. Additional activities include planning to support the cleanup of contaminated areas and disposal of all real and personal property, and the disposition of the site workforce. ($635)
	$ 0	$ 349	$ 1,000
Subtotal, ALBUQUERQUE	$ 0	$ 349	$ 1,000
CHICAGO			
Argonne National Laboratory - East	No activity.	No activity.	Develop a transition plan for transferring eight surplus, contaminated facilities into EM, i.e., the Janus Reactor, 60-Inch Cyclotron, 301 Hot Cells, Building 310 Surplus Retention Tanks, Zero Power Reactor Facility, Argonne Thermal Source Reactor, Building 579 Waste Ion Exchange Facility and Fast Neutron Generator Facility. Complete budgeting, planning and scheduling activities for above mentioned facilities.

2411

III. Program Integration (Cont'd):
CHICAGO (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Argonne National Laboratory - East (Cont'd)	$ 0	$ 0	$ 144
Brookhaven National Laboratory	No activity.	No activity.	Perform monthly tank level readings for six surplus tanks. Perform planning for decontamination of the Graphite Research Reactor.
	$ 0	$ 0	$ 124
Subtotal, CHICAGO	$ 0	$ 0	$ 268
IDAHO	Provided sitewide landlord services (emergency preparedness, environmental monitoring, site planning, etc.) to the 11,000 employees and 514 buildings at nine facilities at the Idaho National Engineering Laboratory (INEL) and in Idaho Falls. Activities completed and moved to landlord for FY 1995 included: twenty Safety and Health Corrective Actions; five Tiger Team Corrective Action Plans; safety and health upgrades at the Experimental Breeder Reactor I and re-opened it for public tours; demolition activities on six surplus buildings at the Test Area North and Central Facilities Area.	Provide environmental compliance, engineering and graphics support, and quality assurance for 130 buildings and 1595 ICPP employees in the deactivation and environmental management programs at the ICPP. Activities include: coordination of operations and maintenance on 10,000 work orders; processing of 3,500 as-built drawings and 500 engineering support work orders; acceptance testing, calibration, and maintenance of 900 radiological instruments and dosimeters, and leak-test seventy sources.	Continue to provide environmental compliance, engineering and graphics support, and quality assurance for 130 buildings and 1450 ICPP employees in the deactivation and environmental management programs at the ICPP. Activities include: coordination of operations and maintenance on 10,000 work orders; processing 3,500 as-built drawings and 500 engineering support work orders; acceptance testing, calibration, and maintenance of 900 radiological instruments and dosimeters, and leak-test 70 sources; quarterly updating of 20 ICPP plot plan drawings.

2412

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
IDAHO (Cont'd)	Sitewide landlord service activities were moved to the landlord category in FY 1995 included: Performed feasibility studies, conceptual planning, conceptual design, and advanced conceptual design for the Idaho Chemical Process Plant (ICPP) for the INEL. Prepared documents for construction of the electrical and utility systems upgrades, Remote Analytical Laboratory turnaround, the Process Evaporator, and fire suppression systems and exits and barriers for fire protection upgrades.	No activity.	No activity.
	$ 7,253	$ 21,432	$ 23,787
OAK RIDGE			
K-25 Site			
Operating Expenses	No activity.	No activity.	Provide program planning and performance measurement guidance for surplus facilities at the Oak Ridge National Laboratory and Y-12 Plant. Develop transition plans and economic development strategies. Develop budget documentation, project management and program plans, schedules, cost estimates, and redefine facility safe envelopes when required.
	$ 0	$ 0	$ 600
Capital Equipment	No activity.	No activity.	Purchase an automated system for maintaining data on the surplus facility inventory.
	$ 0	$ 0	$ 30
Subtotal, K-25 Site	$ 0	$ 0	$ 630
Subtotal, OAK RIDGE	$ 0	$ 0	$ 630

2413

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
OAKLAND	No activity.	Provide required transition and deactivation planning for the transition of surplus facilities managed by the Oakland Operations Office into the Environmental Management Program including six sodium facilities at the Energy Technology Engineering Center.	No activity.
	$ 0	$ 514	$ 0
OHIO			
Mound Plant	Activities were funded by Defense Programs.	Complete site disposition planning activities by issuing the final Mound site-specific transition plan. This plan will address programs' mission termination, deactivation, property disposition, FTE worker retraining/ reemployment, facility reuse/economic development, and stakeholder concerns. Conduct budgetary planning activities, including development of activity data sheets.	Update the Mound site-specific transition plan and conduct budgetary planning activities. ($365)
	No activity.	No activity.	Conduct deactivation activities as specified in the Mound safe shutdown plan. This activity complements direct funding provided under deactivation/compliance actions. ($7,029)
	$ 0	$ 349	$ 7,394
Subtotal, OHIO	$ 0	$ 349	$ 7,394

2414

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
RICHLAND	Provided programmatic and administrative support for the Plutonium Finishing Plant (PFP), Plutonium Uranium Extraction Plant (PUREX), 300 Area Fuel Supply shutdown and Uranium Oxide3 (UO3) Plant. Activities included: program budgeting and planning, cost control and financial reporting; annual reports such as Activity Data Sheets (ADS), Fiscal Year Work Plans, and Hanford Materials Management Plans; providing and maintaining monthly Site Management System (SMS) reports and Progress Tracking System (PTS) reports; preparing System Engineering program and site level documentation in support of Activity Based Costing (ABC); performing ABC review at PFP and PUREX/UO3.	Provide programmatic and administrative support for the PFP, PUREX, and 300 Area Fuel Supply Shutdown. Activities include: program budgeting and planning; cost control and financial reporting; annual reports such as ADS's, Fiscal Year Work Plans, and Hanford Materials Management Plans; providing and maintaining monthly SMS reports and PTS reports; preparing System Engineering program and site level documentation in support of ABC; revising and implementing ABC review at PFP.	Continue to provide programmatic and administrative support for the PFP, PUREX, and 300 Area Fuel Supply Shutdown. Activities will include: program budgeting and planning, cost control and financial reporting; annual reports such as ADS, Fiscal Year Work Plans, and Hanford Materials Management Plans; providing and maintaining monthly SMS reports and PTS reports; preparing System Engineering program and site level documentation in support of ABC; revising and implementing results of ABC review.
	Provided for non-plant specific safeguards and security activities. Activities included: maintenance of policy, implementation and development of requirements associated with Special Nuclear Materials (SNM); support of Materials Control and Accountability Manual; 200 Area nuclear accountability computer support; and upgrades of non-plant specific safeguards and security equipment.	Provide for non-plant specific safeguards and security activities. Activities include: maintenance support for Patrol Operations Center and Alarm Monitoring Operational Support; non-plant security education; computer support and development and maintenance of policies; and procedures that govern use, control, and accountability of SNM.	Provide full administrative and technical support for Nuclear Materials and Facilities Stabilization's safeguards and security activities. Activities include: educate and provide for independent overview of SNM activities; coordinate and manage security system upgrades; and test policy development. A portion of this activity was formerly funded by Defense Programs.

2415

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
RICHLAND (Cont'd)	Provided restart support and technical training certification packages for key personnel at Plutonium Finishing Plant, Plutonium Uranium Extraction and Uranium Oxide. Activities included: developed and updated course materials; developed lesson plans; provided instructors and clerical support; and purchased course materials.	Provide restart support and technical training certification packages for key personnel at Plutonium Finishing Plant and Plutonium Uranium Extraction. Activities include: develop and update course materials; develop lesson plans; provide instructors and clerical support; and purchase course materials. Plan and implement waste minimization activities at PFP and PUREX. Identify priority waste streams and implement pollution prevention opportunities and report results to regulators.	No activity.
	No activity.	Waste minimisation activities are being moved to Deactivation/Compliance Actions (DCA) category and facility specific training is being moved to the Surveillance and Maintenance (S&M) category in FY 1996.	No activity.
	Provided support for centralized and coordinated environmental compliance activities for the Plutonium Finishing Plant, Plutonium Uranium Extraction Plant and Uranium Oxide Plant such as: DOE Order compliance, implementation and renegotiation of Tri-Party Agreement, environmental protection activities, site-wide environmental reporting, Resource Conservation and Recovery Act (RCRA) permitting, negotiations with regulators and engineering and regulatory analysis.	Provide support for centralized and coordinated environmental compliance activities for Facility Operations as a whole. Facility specific efforts have been moved to specific facility DCA or S&M sections. Activities include: DOE Order compliance, implementation and renegotiation of Tri-Party Agreement, environmental protection activities, site-wide environmental reporting, RCRA permitting, negotiations with regulators and engineering and regulatory analysis.	Continue to provide support for centralized and coordinated environmental compliance activities for the PFP and PUREX Plants such as: DOE Order compliance, implementation and renegotiation of Tri-Party Agreement, environmental protection activities, site-wide environmental reporting, RCRA permitting, negotiations with regulators and engineering and regulatory analysis.
	$ 6,983	$ 5,642	$ 6,973

2416

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ROCKY FLATS	Issued the Rocky Flats (RF) Strategic Plan on September 19, 1994. The Plan was issued with extensive input from external stakeholders; identified RF's organizational mission, strategic objectives, strategies, and success criteria to guide the site in meeting its vision for the future; established the purpose and direction for the conduct of activities onsite; and is the mechanism for communication between RF's employees and its public and regulatory community. The Plan is a "living" document and will continue to evolve over the next five to ten years.	Review and update the Strategic Plan to reflect changes in mission, strategic objectives, strategies and/or success criteria, due by September 30, 1995.	The Office of Nuclear Materials and Facilities Stabilization's share of the funding for site planning and integration activities will be funded under the Program Support category.
	Developed the draft Comprehensive Logic Flow Diagram for RF/which will be utilized extensively in both the short-term and long-term planning process on site. The logic flow is based on systems engineering functions concepts and is the identification and definition of the current state and the desired future state of the site. The technology logic flow is then modified for consistency with regulatory and legal requirements and drivers. The logic was modified in an interactive, reasonable, and responsible way to ensure a high level, logical basis for action results.	Will resource load the Comprehensive Logic Flow Diagram to develop a sitewide integrated resource loaded schedule that can be baselined. Complete the schedule by June 1995.	The Office of Nuclear Materials and Facilities Stabilization's share of the funding for updating the sitewide schedule will be funded under the Program Support category.

2417

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ROCKY FLATS (Cont'd)	No activity.	Establish six liability reduction teams to focus activities on the new cleanup mission at RF. Liability encompasses all aspects associated with safety, security, environmental, financial, and political program implications. A measure of liability is essential to ensure that identified site liabilities are balanced with appropriate levels of response. The teams will ascertain the extent of identified liabilities, develop and implement programs, organizations, and actions to ensure that the extent and consequences of each liability is reduced to an acceptable level.	The Office of Nuclear Materials and Facilities Stabilization's share of the funding for administrative support for the liability reduction teams will be funded under the Program Support category.
	No activity.	Operate and maintain the RF Systems Engineering Analysis (SEA), a risk analysis software tool (Milestone 4700.3 due as needed throughout the fiscal year) which (1) evaluates the potential risks of site plant material to human health and the environment; (2) is used to determine remediation and disposal strategies and options; (3) evaluates plant activities, identifies and evaluates identified site issues; and (4) provides site-wide inventory of current land use and assists in the development of long range site land use development plans.	The Office of Nuclear Materials and Facilities Stabilization's share of the funding for the Systems Engineering Analysis (SEA) project will be funded under the Program Support category.
	Activity funded by Defense Programs.	Provide funding to support the Emergency Management, and Health and Safety Programs.	The Emergency Management, and Health and Safety Programs will be funded under the Landlord category.
	$ 4,238	$ 800	$ 0

2418

III. Program Integration (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
SAVANNAH RIVER	No activity.	Provide transition planning to develop a transition plan, initiate a transition roadmap to integrate newly-generated waste and surplus facilities into the ongoing cleanup program, and coordinate and negotiate with the current operating program. ($514)	Continue at an increased level of effort planning activities required to support transition activities following the transfer of the Savannah River Site from Defense Programs. ($1,228)
	Activity funded by Defense Programs.	Activity funded by Defense Programs.	Activities include the development of Activity Data Sheets, the EM Five-Year Plan, and specific transition plans for each facility as well as characterization of the buildings, hazardous and nuclear materials, and environmental concerns. Also includes preparation of detailed plans and budgets, development of cost estimates, scheduling, quality assurance efforts, and records control. Specific facilities include: buildings at the C, K, L, P, and R reactor sites, Heavy Water, M-Area, F-Canyon, FB-Line, 235-F, 247-F, H-Canyon, and HB-Line. ($22,019)
	$ 0	$ 514	$ 23,247
Program Integration	$ 18,474	$ 29,590	$ 63,299

2419

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Surveillance and Maintenance

The Surveillance and Maintenance category funds all activities and related processes necessary to ensure that surplus facilities, or portions thereof, are maintained in a safe condition; such as, surveillance of safety controls; maintenance of fire, safety, and life support systems; and building support and essential services to be performed as specified by Operational Safety Requirements (OSR). This category also includes system/facility monitoring, corrective and preventive maintenance, and safeguards and security.

All non-Deactivation/Landlord-related activities undertaken by the Office of Nuclear Materials and Facilities Stabilization (EM-60) in response to binding commitments including compliance orders, court decisions or consent agreements with Federal, state and local authorities; and DOE Directives related to S&M activities, is supported in this category. This includes those activities that EM-60 is required to accomplish either by law or binding agreement.

Specific activities funded within this category include:

- Maintenance (preventive and corrective) of fire, safety and life support systems specific to a facility, building or process
- Surveillance of safety control systems
- Safeguards and security support
- Maintenance of vital safety systems which are specific to a facility, building, or process in a condition such that it performs as specified in a related OSR. Administrative, facility, building or technical support and operations management
- Maintenance of the formally-defined Facility Safety Envelope
- Federal Facility Compliance Act (FFCA)/Interagency Agreement requirements
- Facility-specific environmental compliance activities (e.g., DOE Order 5400.1)
- Radiation protection requirements
- Compliance with fire protection requirements or national fire codes (e.g., National Fire Protection Agency
- Facility-specific environmental monitoring (e.g., air emission, wastewater discharges)
- Permitting requirements
- Occupational Safety and Health Administration compliance activities
- Conduct of Operations (where applicable) pursuant to DOE Order 5480.19
- Compliance with electrical safety requirements or national electric codes
- Other Environmental, Safety and Health-related drivers or activities

2420

II. A. Summary Table: Surveillance and Maintenance

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ALBUQUERQUE				
Los Alamos National Laboratory	$ 0	$ 0	$ 224	$ 224
Subtotal, ALBUQUERQUE	$ 0	$ 0	$ 224	$ 224
IDAHO	$ 0	$ 31,460	$ 27,062	$ -4,398
OHIO				
Mound Plant	0	0	6,746	6,746
Subtotal, OHIO	$ 0	$ 0	$ 6,746	$ 6,746
RICHLAND				
Operating Expenses	$ 95,558	$ 89,060	$ 77,399	$ -11,661
Capital Equipment	300	250	227	-23
Construction	200	900	114	-786
Subtotal, RICHLAND	$ 96,058	$ 90,210	$ 77,740	$ -12,470
ROCKY FLATS	$ 45,811	$ 146,340	$ 142,900	$ -3,440
SAVANNAH RIVER				
Operating Expense	0	0	279,191	279,191
Capital Equipment	0	0	7,230	7,230
Construction	0	0	1,640	1,640
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 288,061	$ 288,061
Total, Surveillance and Maintenance	$ 141,869	$ 268,010	$ 542,733	$ 274,723

2421

II. B. Laboratory and Facility Funding Table: Surveillance and Maintenance

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Hanford Site	$ 96,058	$ 90,210	$ 77,740	$ -12,470
Idaho Chemical Processing Plant	0	31,460	27,062	-4,398
Los Alamos National Laboratory	0	0	224	224
Mound Plant	0	0	6,746	6,746
Rocky Flats Plant	45,811	146,340	142,900	-3,440
Savannah River Site	0	0	288,061	288,061
Total, Surveillance and Maintenance	$ 141,869	$ 268,010	$ 542,733	$ 274,723

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Surveillance and Maintenance			
ALBUQUERQUE			
Los Alamos National Laboratory	Activities were funded by Defense Programs (DP).	Activities are funded by DP.	Continue surveillance and maintenance activities for three high ranking Surplus Facility Inventory and Assessment assets at the Los Alamos National Laboratory. These assets are TA21-003, Special Nuclear Materials (SNM) Laboratory; TA21-004, SNM Laboratory; and TA21-146, Filter House. Conduct routine inspections and maintenance as necessary to complete all operational safety envelope defined in the safety analysis report.
	$ 0	$ 0	$ 224
Subtotal, ALBUQUERQUE	$ 0	$ 0	$ 224
IDAHO	Activity funded in the Deactivation/Compliance Actions category.	Provide required surveillance and maintenance activities for ten surplus radioactively contaminated facilities at the Idaho National Engineering Laboratory (INEL) including CPP-601 and CPP-602, the main reprocessing facilities.	Continue to provide required surveillance and maintenance activities for ten surplus radioactively contaminated facilities at the INEL which include CPP-601 and CPP-602, the main reprocessing facilities.
		Provide plant services, environmental, safety and health corrections, Unirradiated Fuel Storage Facility (CPP-651) operations, and safety functions for 130 buildings and 1595 ICPP employees in the deactivation and environmental management programs at the Idaho Chemical Process Plant (ICPP). Activities include: organize and control 8000 corrective and 2200 preventative maintenance procedures; provide Criticality Detection System coverage with three separate types of Criticality Alarm Systems that cover	Continue to provide plant services, environmental, safety and health corrections, Unirradiated Fuel Storage Facility (CPP-651) operations, and safety functions for 130 buildings and 1450 Idaho Chemical Processing Plant (ICPP) employees in the deactivation and environmental management programs at the ICPP. Activities include: organize and control 8000 corrective and 2200 preventative maintenance procedures; provide Criticality Detection System coverage with three separate types of Criticality Alarm

2423

III. Surveillance and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
IDAHO (Cont'd)		ten areas and over fifty detectors; inspect and maintain 130 acres of grounds, roads, and sidewalks; correct sixty Environmental Safety and Health (ES&H) deficiencies per month; receive, inspect, and handle all materials entering and leaving the ICPP, which averages 9,500 items per day.	Systems that cover ten areas of the ICPP and over 50 detectors; develop and maintain high efficiency particulate air (HEPA) filter testing program for 1400 HEPA filters; inspect and maintain 130 acres of grounds, roads, and sidewalks; correct sixty ES&H deficiencies per month; write 800 preventative maintenance procedures and fifty-two health physics procedures; prepare five general ICPP Safety Analysis Reports (SARs); and review and update over 4,000 pages of SAR general sections.
	$ 0	$ 31,460	$ 27,062
OHIO			
Mound Plant	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Conduct surveillance and maintenance activities at the Mound Plant. Conduct routine inspections and maintenance as necessary to complete all operational safety requirements and maintain the safety envelope defined in the safety analysis report.
	$ 0	$ 0	$ 6,746
Subtotal, OHIO	$ 0	$ 0	$ 6,746

2424

III. Surveillance and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
RICHLAND			
Operating Expenses	Provided base activities which maintain the safety envelope and regulatory compliance requirements for twelve non-reactor facilities at the Hanford 300 Area Fuels Supply Shutdown Facility. Base activities included: surveillance and maintenance of safety control systems; maintenance of fire, safety and life support systems; building support and essential services, as specified by Operational Safety Requirements (OSR); and waste handling and disposal assessments. Defense Programs provided funding for surveillance and maintenance, business management, and safeguards and security for 1,900 metric tons of the Special Nuclear Materials (SNM) stored at the 300 Area Fuel Supply Shutdown Facility.	Provide surveillance and required maintenance to ensure a minimum safety envelope for approximately twenty plant personnel onsite and safety-related equipment located within twelve buildings in the 300 Area. Activities include: surveillance and maintenance of safety controls; maintenance of fire, safety and life support systems; and building support and essential services, as specified by Operational Safety Requirements (OSR); and waste handling and disposal assessments. DP provides funding for surveillance and maintenance and safeguards and security, and business management for 1,900 metric tons of the Special Nuclear Materials (SNM) stored at the 300 Area Fuel Supply Shutdown Facility.	Continue to provide necessary surveillance and maintenance activities to maintain required safety, health and environmental programs. Activities include: surveillance and maintenance of safety controls; maintenance of fire, safety and life support systems; and building support and essential services, as specified by Operational Safety Requirements (OSR); and waste handling and disposal assessments; Lessons Learned; Conduct of Operations and Self Assessments; perimeter surveillance of a building identified as a safety hazard. Building surveillance and maintenance activities are expected to be reduced by approximately ten percent resulting from deactivation activities (closure of 300 Area Solvent Evaporator and 304 facility in FY 1995).
	Provided plant services, environmental, safety and health corrections, and safety functions to maintain the safety envelope for the Plutonium Uranium Extraction and the Uranium Oxide3 (PUREX/UO3) plants and 250 employees in the surveillance and maintenance, and environmental management programs at PUREX/UO3. Activities included: laboratory support for environmental and Resource Conservation and Recovery Act (RCRA) sampling and control of waste transfers; conducting of approximately 5,000 surveillances per week at PUREX, on canyons, tanks and 480,000 square feet of floor space; assessing the condition of 500,000 square feet of contaminated areas, three tons of spent nuclear fuel, 200,000 gallons of nitric acid, 6000 gallons of plutonium nitrate,	Provide plant services, environmental, safety and health corrections, and safety functions for the PUREX plant and 240 employees in the deactivation and environmental management programs at PUREX. Activities include: laboratory support for environmental and RCRA sampling and control of waste transfers; performing approximately 4,900 surveillances a week at PUREX, on canyons, tanks, and 480,000 square feet of floor space; assessing the condition of 330,000 square feet of contaminated areas, three tons of spent nuclear fuel, 200,000 gallons of nitric acid, 6000 gallons of plutonium nitrate, 20,000 gallons of organic solutions, and eleven ventilation pathways.	Continue to provide plant services, environmental, safety and health corrections, and safety functions for the PUREX plant and 240 employees in the deactivation and environmental management programs at PUREX. Activities include: laboratory support for environmental and RCRA sampling and control of waste transfers; 4,500 surveillances a week at PUREX, on canyons, tanks, and 480,000 square feet of floor space; assessment of the oondition of 80,000 square feet of contaminated areas, 20,000 gallons of organic solutions, eleven ventilation pathways.

2425

III. Surveillance and Maintenance (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	20,000 gallons of organic solutions, and eleven ventilation pathways.		
	Provided plant services, environmental, safety and health corrections, and safety functions for the Plutonium Finishing Plant (PFP) and 300 employees in the deactivation and environmental management programs at PFP. Activities included: conducted surveillances to assess the condition of radioactively contaminated areas and radiologically controlled areas, 25,000 kg of plutonium bearing materials, and other residual process chemicals; performed preventive and corrective maintenance on emergency power generation equipment, compressed air systems, heating, ventilation, and air conditioning (HVAC) systems, steam systems, instrumentation, and alarm/communication equipment; and completed modification and upgrade of facility safety documentation. Special nuclear material safeguards disposition activities, including vault storage, were funded by Defense Programs.	Provide plant services, environmental, safety and health corrections, and safety functions for the Plutonium Finishing Plant (PFP) and 300 employees in the deactivation and environmental management programs at PFP. Activities include: surveillances to assess the condition of radioactively contaminated areas and radiologically controlled areas, 25,000 kg of plutonium bearing materials, and other residual process chemicals; performing preventive and corrective maintenance on emergency power generation equipment, compressed air systems, HVAC systems, steam systems, instrumentation, and alarm/communication equipment.	Continue to provide plant services, environmental, safety and health corrections, and safety functions for the Plutonium Finishing Plant (PFP) and 300 employees in the deactivation and environmental management programs at PFP. Activities include: surveillances to assess the condition of radioactively contaminated areas and radiologically controlled areas, 24,000 kg of plutonium bearing materials, and other residual process chemicals; performance of preventive and corrective maintenance on emergency power generation equipment, compressed air systems, HVAC systems, steam systems, instrumentation, and alarm/communication equipment.
	No activity.	No activity.	Provide operating expense support for an FY 1998 Candidate Line Item to upgrade the PFP Safeguards and Security Systems required to safely store special nuclear materials (SNM) and to remain in compliance with DOE regulations on control and accountability of nuclear materials and physical protection of SNM and related vital equipment.
	$ 95,558	$ 89,060	$ 77,399

2426

III. Surveillance and Maintenance (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Procured safety-related equipment spares for Capital Equipment Not Related To Construction (CENRTC) for the Plutonium Uranium Extraction plant during its deactivation. Equipment spares included: waste compaction equipment, replacements for failed motors and instruments.	Procure safety-related equipment spares for CENRTC for the PUREX plant during its deactivation. Examples include pumps, instruments, and motors necessary to complete waste transfers.	Purchase safety-related equipment spares for CENRTC for the PUREX plant during its deactivation. Examples include instrumentation necessary for building monitoring.
	Replaced failed equipment (i.e. pumps, motors, detectors, etc.) required to maintain the Plutonium Finishing Plant (PFP) in a safe condition for workers while performing surveillance and maintenance and initiating interim actions.	Replace failed equipment (i.e. pumps, motors, detectors, etc.) required to maintain the PFP in a safe condition for workers while performing surveillance and maintenance and initiating interim actions. This activity moved to Deactivation/Compliance category as stabilization activities became more prevalent at the PFP.	No activity.
	$ 300	$ 250	$ 227
Construction	Supported construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Funding supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Continue to support construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 200	$ 900	$ 114
Subtotal, RICHLAND	$ 96,058	$ 90,210	$ 77,740

2427

III. Surveillance and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ROCKY FLATS	Accomplished 150,000 required surveillance activities to maintain safety envelopes in 10 former weapon component manufacturing facilities in accordance with the current Operational Safety Requirements (OSR).	Conduct 150,000 required surveillance activities to maintain safety envelopes in 15 former weapon component manufacturing facilities in accordance with the current OSR's and as agreed to in a Memorandum of Agreement signed December 27, 1994, between Defense Programs (DP) and Environmental Management (EM) which transferred 5 additional facilities from DP to EM and which directs that EM eliminate unnecessary surveillances as a result of safety reviews.	Conduct 150,000 required surveillance activities to maintain safety envelopes in 15 former weapon component manufacturing facilities in accordance with the current OSR's and as agreed to in a Memorandum of Agreement signed December 27, 1994, between Defense Programs (DP) and Environmental Management (EM) which transferred 5 additional facilities from DP to EM and which directs that EM eliminate unnecessary surveillances as a result of safety reviews. Survey 15,000 air flow conditions and maintain facility system including ventilation.
	Completed 5,740 preventive and 1,690 corrective maintenance activities of RF Vital Safety Systems and building support systems.	Perform 5,700 preventive and 3,400 corrective maintenance work activities on vital safety and building support systems.	Perform 5,100 preventive and 3,500 corrective maintenance work activities on vital safety and building support systems.
	Performed 3,430 calibrations of RF building equipment.	Perform 3,400 calibrations of RF building equipment.	Continue to perform 3,400 calibrations of RF building equipment.
	Prepared 460 occurrence reports.	Prepare occurrence reports, provide lessons learned, perform root cause analyses, and manage the corrective actions for an estimated 450 occurrences.	Continue to prepare occurrence reports, provide lessons learned, perform root cause analyses, and manage the corrective actions for an estimated 450 occurrences.
	Activity funded by Defense Programs.	Activity funded by Defense Programs.	Maintain the safety envelope for the 400 Area non-nuclear weapon component manufacturing buildings transferred from Defense Programs to Environmental Management.
	Completed the Hazardous Waste Compliance Program in response to the Colorado Hazardous Waste Act (CHWA).	Formulate a Compliance Order with the State of Colorado to address potential non-compliances under the CHWA.	Complete all requirements of the Compliance Order on Hazardous Waste Compliance.

2428

III. Surveillance and Maintenance (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ROCKY FLATS (Cont'd)	Performed 20 Operational Safety Review (OSR) revisions, 25 OSR interpretations, 44 Unreviewed Safety Question Determinations (USQD) and 107 Safety Evaluation Screens (SES).	Perform 33 OSR revisions, 20 OSR interpretations and 140 unreviewed safety question determinations and 345 safety evaluation screens.	Revise and interpret 45 OSR's and perform 100 USQD's and 280 SES's.
	Conducted 8,000 radiological surveys and performed 89,000 air monitoring system checks.	Conduct approximately 8,000 radiological surveys and perform approximately 89,000 air monitoring system checks.	Conduct approximately 8,000 radiological surveys and perform approximately 89,000 air monitoring system checks.
	No activity.	No activity.	Perform corrective actions within the building baselines to dispose of idle equipment and tanks according to the terms of the Compliance Order on Hazardous Waste Compliance.
	$ 45,811	$ 146,340	$ 142,900
SAVANNAH RIVER			
Operating Expense	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Continue to receive domestic university and government research reactors at the rate of about two casks per month. Based on the Record of Decision for the Environmental Impact Statement for Research Reactor Spent Nuclear Fuel, begin receiving Foreign Research Reactor Spent Nuclear Fuel at a rate of 2 casks per month with an average of 33 assemblies per cask. Complete and issue RBOF 5480.23 Safety Analysis Report. Continue to regenerate portable deionizer resin beds at the rate of about three per month.
			Conduct approximately 35,500 required surveillances to maintain safety envelopes in accordance with the current operational safety requirements.

2429

III. Surveillance and Maintenance (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expense (Cont'd)			Perform approximately 26,000 preventive and 6,700 corrective maintenance work activities on vital safety and building support systems. Perform 5,300 calibrations of SRS building equipment. Prepare occurrence reports, provide lessons learned, perform root cause analysis, and manage the corrective actions for an estimated 640 occurrences. Perform 4,000 unreviewed safety question determinations. Conduct 47,000 radiological surveys and perform more than 123,000 air quality surveys. Prepare approximately 25,600 work packages, complete 78,000 procedures, and revise more than 3,500 procedures. Conduct 200 emergency preparedness drills. Perform 1,200 quality assurance and health (radiation) protection audits and assessments, and write and disposition of approximately 1,100 nonconformance reports.
	$ 0	$ 0	$ 279,191

2430

III. Surveillance and Maintenance (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Provide funds for capital equipment projects, with a Total Estimated Cost (TEC) of more than $500,000 to support continuity of operations and ensure availability of replacement parts; and to replace and upgrade equipment necessary in support of the surveillance and maintenance program. Provide funds for the replacement of minor equipment to support the surveillance and maintenance program. Examples of equipment to be funded are shipping containers, FB-Line; bearing/motor base and motors; New Vault Surveillance System, 221-HBL; spare canyon vessel vent filters; new PCM-1B monitors; spare dinkey; TRU waste management, 221-HBL; and new warm crane docking doors, 221-F/H.
	$ 0	$ 0	$ 7,230
Construction	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Funding supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 0	$ 0	$ 1,640
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 288,061
Surveillance and Maintenance	$ 141,869	$ 268,010	$ 542,733

2431

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Deactivation/Compliance Actions

The Deactivation/Compliance Actions category funds all activities that remove surplus materials, chemicals, supplies, classified equipment and documents and stabilized contamination, including removal of hazardous, mixed, and radioactive wastes. These actions are undertaken both to reduce the physical risks and hazards at these facilities and to decrease the associated costs of, in particular, surveillance and maintenance (i.e., the "mortgage"). This category also includes design efforts associated with approved deactivation projects.

Specific activities funded within this category will include:

- Nuclear materials management programs and operations, including surplus material management
- Material stabilization programs
- Surplus facility conversion programs
- Removal of radioactive, hazardous, or mixed wastes
- Storage tank maintenance (i.e., which is facility- or process-specific)
- Classified material removal activities
- Deactivation project design efforts following approval of Key Decision (KD) 2
- Deactivation-related activities specifically undertaken in response to binding commitments (including compliance orders, court decisions, and/or consent agreements) with Federal, state, and local authorities

2432

II. A. Summary Table: Deactivation/Compliance Actions

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ALBUQUERQUE				
Los Alamos National Laboratory	$ 0	$ 0	$ 6,600	$ 6,600
Pinellas Plant	0	0	16,400	16,400
Subtotal, ALBUQUERQUE	$ 0	$ 0	$ 23,000	$ 23,000
IDAHO	$ 13,311	$ 8,059	$ 11,269	$ 3,210
OHIO				
Mound Plant	0	0	10,444	10,444
Subtotal, OHIO	$ 0	$ 0	$ 10,444	$ 10,444
RICHLAND				
Operating Expenses	$ 23,432	$ 28,057	$ 41,418	$ 13,361
Capital Equipment	0	0	1,364	1,364
Subtotal, RICHLAND	$ 23,432	$ 28,057	$ 42,782	$ 14,725
ROCKY FLATS				
Operating Expenses	$ 70,233	$ 88,752	$ 77,200	$ -11,552
Subtotal, ROCKY FLATS	$ 70,233	$ 88,752	$ 77,200	$ -11,552
SAVANNAH RIVER				
Operating Expenses	$ 0	$ 0	$ 44,024	$ 44,024
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 44,024	$ 44,024
Total, Deactivation/Compliance Actions	$ 106,976	$ 124,868	$ 208,719	$ 83,851

2433

II. B. Laboratory and Facility Funding Table: Deactivation/Compliance Actions

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Hanford Site	$ 23,432	$ 28,057	$ 42,782	$ 14,725
Idaho Chemical Processing Plant	13,311	8,059	8,217	158
Idaho National Engineering Lab	0	0	3,052	3,052
Los Alamos National Laboratory	0	0	6,600	6,600
Mound Plant	0	0	10,444	10,444
Pinellas Plant	0	0	16,400	16,400
Rocky Flats Plant	70,233	88,752	77,200	-11,552
Savannah River Site	0	0	44,024	44,024
Total, Deactivation/Compliance Actions	$ 106,976	$ 124,868	$ 208,719	$ 83,851

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Deactivation/Compliance Actions			
ALBUQUERQUE			
Los Alamos National Laboratory	No activity.	No activity.	Initiate a Los Alamos National Laboratory (LANL) program for residue waste elimination at Rocky Flats (RF). The goal of this activity is to create a partnership between LANL, RF, and the Office of Environmental Management to provide support in the disposition of plutonium contaminated materials at the RF Plant. Activities include: 1) provide research and development (R&D), engineering, safety analysis, procedures, and training support for the plutonium liquids stabilization effort at the RF Plant; 2) conduct R&D on solid residue treatment alternatives, including salt distillation and magnetic separation; design and fabricate process modules for installation at the RF Plant; 3) develop and deploy nondestructive assay measurement techniques and systems at the RF Plant; and 4) develop long-term storage packaging criteria for plutonium and support the decontamination of orally hemishells to permit transfer to Oak Ridge.
	$ 0	$ 0	$ 6,600

2435

III. Deactivation/Compliance Actions (Cont'd):
ALBUQUERQUE (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Pinellas Plant	Activities funded by Defense Programs.	Activities funded by Defense Programs.	Provide funding to support the sitewide cleanup of buildings and systems and the disposal of hazardous and non-hazardous waste materials that will prepare the facility for ultimate disposal. Approximately 480,000 square feet of the 729,000 square feet onsite is to be deactivated. Approximately 18,000 of 27,000 pieces of personal property is to be dispositioned. Systems and facilities are to be cleaned up, surveyed and released for privatization and/or transfer to Environmental Restoration.
	$ 0	$ 0	$ 16,400
Subtotal, ALBUQUERQUE	$ 0	$ 0	$ 23,000
IDAHO	Completed deactivation of the Second and Third Cycle Extraction Processes and completed deactivation of the Denitrator Process to stabilize 12,000 liters of liquid uranium inventories in the CPP-601 and CPP-602 main reprocessing facilities. Completed equipment flushing and disposition of surplus chemicals in the Fluorinel Dissolution Process.	Complete deactivation of the CPP-601 and CPP-602 main reprocessing facilities including completion of the uranium accountability for the processing systems with the exception of the Rover Dry End Process scheduled for completion in FY 1998. Proceed with design efforts required for the deactivation of the Rover and Old Waste Calcine facilities.	Complete activities such as: Operational Readiness Review preparations for the deactivation of the Rover Dry End Process including the removal of up to 150 kg of uranium in graphite ash from the process; definitive design for the deactivation of the Old Waste Calcine Facility; characterization, planning, design and cost estimation on approximately 22 prioritized non-radioactive contaminated facilities for disposition in FY 1997. Also, provide funding for the Facility Disposal Initiative which will characterize and dispose of the Office of Nuclear Materials and Facilities Stabilization owned non-contaminated surplus facilities.
	$ 13,311	$ 8,059	$ 11,269

2436

III. Deactivation/Compliance Actions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
OHIO			
Mound Plant	Activities funded by Defense Programs.	Activities funded by Defense Programs.	Provide direct funding for the continuation of the safe shutdown deactivation activity at the Mound Plant. Activities will include: relocation/disposition of excess materials, property, and full time equivalents; and placement of facilities in a safe shutdown condition which will allow their transfer to Environmental Restoration or economic development for ultimate disposition. This activity will be completed on nearly 60 of 130 site facilities by the end of FY 1996.
	$ 0	$ 0	$ 10,444
Subtotal, OHIO	$ 0	$ 0	$ 10,444
RICHLAND			
Operating Expenses	Characterized, treated, packaged and transported waste materials from 300 Area Fuel Supply buildings. Activities included: excessing 970 gallons of solvent waste materials and removal of seventy-one drums of contaminated pyrophoric material from surplus fuel manufacturing equipment; preparing surplus metalworking facility and equipment for privatization; providing support for Resource Conservation and Recovery Act (RCRA) closure activities and environmental regulatory requirements.	Initiate site characterization and maintain RCRA reporting requirements at the 303-K facility and the Waste Acid Treatment System (WATS). Activities include: complete Building 304 concretion deactivation activities including the disposition of twenty-one drums of hazardous pyrophoric waste; accelerate the start of RCRA closure activities at the WATS; and initiate deactivation activities at Building 333.	Continue to characterize, treat, package and transport waste materials from 300 Area Fuel Supply buildings. Activities include: complete WATS cleanup in 303-F; continue deactivation of Building 333; begin demolition of surplussed Building 313 South; prepare buildings 303-F, 304 and 304-A for turnover to the Hanford Environmental Restoration Program.

2437

III. Deactivation/Compliance Actions (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Completed Uranium Oxide Plant deactivation. Initiated deactivation of Plutonium Uranium Extraction Plant (PUREX). Activities included: Initiated disposition of 6000 gallons of solution containing 9kg of plutonium to the Hanford Tank Farms (completing transfer of seven batches); flushed eight vessels in PUREX main building; evaluated disposition options for 183,000 gallons of uranium contaminated Nitric Acid; deactivated 1,518 instruments and control panels; cleaned out two plutonium contaminated glove boxes; and reduced radiation zones by 170,000 square feet.	Continue PUREX deactivation. Activities include: transfer forty-two batches of plutonium solution to tank farms for disposal; flush fifty-nine vessels in the PUREX main building; initiate shipments of 183,000 gallons of uranium contaminated nitric acid; clean out nine contaminated glove boxes; continue area reduction of radiation zones by 250,000 square feet; operate waste concentrator equipment to minimize waste generation; transfer 92,000 gallons of surplus uranium contaminated nitric acid; complete transfer of 6,000 gallons of solutions containing 9kg of plutonium; clean out seven remaining gloveboxes in N cell, Q cell, and PM room; initiate regulatory and logistical preparations for transfer of three tons of spent nuclear fuel; and continue deactivation of 1,922 instrumentation and control panels.	Continue PUREX deactivation. Activities include: flush remaining twenty-nine vessels in PUREX main building; complete transfer of remaining 91,000 gallons of surplus uranium contaminated nitric acid; reduce radiation zones by 80,000 square feet; complete transfer of three tons of spent nuclear fuel; complete operation of waste concentrator equipment; and deactivate approximately 2,000 instruments and control panels.
	Initiated preparation of Environmental Impact Statement (EIS) to determine deactivation processes for the Plutonium Reclamation and Remote Mechanical C-Line at the Plutonium Finishing Plant (PFP). Activities included: completed short-term actions such as decontamination of tunnels and duct levels from Surface Contamination Area (SCA) to Radiological Control Area (RCA) status; cemented thirty items of low plutonium content reactive scrap stored as sludge to reduce dose by 20 mrem per year; downloaded 250 liters of organic solution and 1,500 liters of aqueous plutonium-bearing solution from the Plutonium Reclamation Facility; evaluated integrity of twenty-seven 10-L containers of plutonium solutions; and removed loose contamination from	Initiate and complete thermal stabilization of 236 items of high plutonium content reactive scrap containing 23 kg of plutonium. Reduce dose by 4 mrem per year. Complete transloading of solutions from twenty-seven 10-L containers to poly bottles. Remove 10 kg of plutonium from glovebox bays and canyon floors in Plutonium Reclamation Facility. Complete removal of loose contamination from 10,000 square feet of facility area. Complete Draft EIS.	Initiate planning for deactivation activities based on the EIS Record of Decision. Complete 291-Z stack monitor upgrades. Complete EIS.

2438

III. Deactivation/Compliance Actions (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	85,000 square feet in the ventilation room and 15,000 square feet in the PFP tunnel area.		
	Activity funded in the Program Integration category.	Activity funded in the Program Integration category.	Fund Hanford pollution prevention and waste minimization activities to achieve compliance with DOE Orders and environmental regulations including Executive Order 12066, specifically for PUREX, PFP, and 300 Area. Identify priority waste streams, implement pollution prevention techniques and prepare annual reports for regulations.
	$ 23,432	$ 28,057	$ 41,418
Capital Equipment	Activity funded in the Surveillance and Maintenance category.	Activity funded in the Surveillance and Maintenance category.	Purchase equipment such as criticality alarm systems, fan motors, and computers to support short-term stabilization activities at the Plutonium Finishing Plant. Provide facility maintenance to ensure worker safety and to prevent any out-of-code safety and environmental conditions.
	$ 0	$ 0	$ 1,364
Subtotal, RICHLAND	$ 23,432	$ 28,057	$ 42,782

2439

III. Deactivation/Compliance Actions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
ROCKY FLATS			
Operating Expenses	Moved 900 containers of Special Nuclear Material (SNM) from Building 991 to Building 371.	Complete the draft Building 371 Environmental Assessment (EA) for SNM long-term storage.	Consolidate 250 containers of plutonium metal and oxides from Building 779 into Building 371.
	Removed plutonium oxide and repackaged 200 containers of plutonium metal.	Repackage 250 plutonium metal containers stored in contact with plastic and thermally stabilize nine kilograms of plutonium oxide.	Remove plutonium oxide and repack 1,400 plutonium metal storage containers and thermally stabilize the resulting plutonium oxide.
	Completed cementation of 1,300 liters of plutonium solutions and drained four tanks in Building 771.	Precipitate 300 liters of highly concentrated plutonium solutions and solidify 1,000 liters of solutions through cementation.	Drain 7,000 liters of plutonium solutions from tanks in Buildings 771 and 371 and continue precipitation and cementation activities.
	Met all 14 milestones in the February 1994 Judicial Order associated with the storage of residues in container storage units for compliance with the Resource Conservation and Recovery Act (RCRA).	The State of Colorado issued a permit for storage of residues in container storage units. Continue to meet milestones in follow-on August 1994 Judicial Order associated with storage of residues in gloveboxes and vault-type rooms.	Manage storage of residues in compliance with RCRA permit.
	No activty.	Install filter vents on 2,000 drums and perform solid sampling and analysis for 100 drums of solid residues. Perform headspace sampling and solid analysis for 42 drums of solid residues.	Continue residue sampling and prepare a residue characterization report describing the residues by Item Description Code (IDC), constituents, packaging, and current condition.
	Prepared the highly enriched uranyl nitrate program plan.	Ship 1,300 liters of highly enriched uranyl nitrate solutions to off-site location for processing to a solid oxide form.	Ship the remaining 1,400 liters of highly enriched uranyl nitrate solutions from Rocky Flats on or before September 30, 1996.
	Developed a draft Facility Safety Analysis Report (FSAR) for Building 371.	Complete Building 371 Hazards and Safety Analysis Report by September 30, 1995, in order to support plutonium consolidation from six buildings into Building 371.	Complete annual update and reissue of the Building 371 Safety Analysis Report (SAR) due on or before September 30, 1996.

2440

III. Deactivation/Compliance Actions (Cont'd):
ROCKY FLATS (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Transferred 5,000 low-level mixed waste containers and 1,000 straight hazardous waste containers to permitted storage at Rocky Flats.	Consolidate under the Chemical Management Program, the control and disposition of 3,696 (regulated and in permitted storage) and 10,022 chemicals that are excess but not RCRA regulated chemicals.	Dispose of 4,000 RCRA regulated chemicals in permitted storage.
	Performed radiological assay of 600 tanks, 4,000 containers, and 1,500 High-Efficiency Particulate Air (HEPA) filters to determine plutonium concentration.	Continue to perform radiological assay of 600 tanks, 4,000 containers, and 1,500 HEPA filters to determine plutonium concentration.	Continue to perform radiological assay of 600 tanks, 4,000 containers, and 1,500 HEPA filters to determine plutonium concentration.
	Los Alamos National Laboratory (LANL) provided technical support to the site to include research and development (R&D), engineering, safety analysis, procedures, and training support for the plutonium liquids stabilization effort.	The LANL provides technical support to the site to include R&D, engineering, safety analysis, procedures, and training support for the plutonium liquids stabilization effort.	Continue a partnership with LANL, the Rocky Flats Environmental Technology Site (RFETS), and Environmental Management (EM), concerning Residue Waste Elimination and Disposition of Plutonium Contaminated Materials at Rocky Flats (RF). Activities include: R&D, engineering, safety analysis, procedures, training support for the plutonium liquids stabilization effort at RF; conducting R&D on solid residue treatment alternatives, including salt distillation and magnetic separation; designing and fabricating process modules for installation at RF; developing and deploying non-destructive assay measurement techniques and systems at RF; and developing long-term storage packaging criteria for plutonium and supporting the decontamination of hemishells to permit transfer to Oak Ridge.
	$ 70,233	$ 88,752	$ 77,200
Subtotal, ROCKY FLATS	$ 70,233	$ 88,752	$ 77,200

2441

III. Deactivation/Compliance Actions (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
SAVANNAH RIVER			
Operating Expenses	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Put River Water System (K-Reactor) into shutdown condition. Complete Disassembly Basin Upgrade Line Item Project. Continue Heavy Water Processing and store inventory in K-Reactor. Commence drumming of moderator from reactor storage tanks for storage in K-Reactor. Shutdown TPR & DW Heavy Water facilities. Complete the return to Oak Ridge of all HEU metal currently in the form of fuel for SR Reactors. Melt fuel, cast into ingots, assay, package, and ship HEU metal ingots FROM 321-M to Y-12. Complete casting of all fuel assemblies. Prepare 6,2026 ingots of HEU metal during FY 96. Repackage impure alloy and return to Y-12 for long term storage. Shutdown 321-M deinventory operations and equipment.
	$ 0	$ 0	$ 44,024
	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Continue stabilization of SRS nuclear materials in accordance with NEPA decisions. Stabilize approximately: 40,000 gallons of plutonium solutions to metal in FB-Line; 130 MTU of reactor targets to plutonium metal (FB-Line) and depleted uranium oxide (FA-Line). Continue stabilization of plutonium process residues. Initiate the conversion of existing H-Canyon enriched uranium solutions to low enriched uranium oxide through dilution and conversion in FA-Line. Continue development of the Conceptual Design Report (CDR) for the consolidated nuclear materials storage vault. Continue installing prototype Bagless Transfer system in FB-Line.

2442

III. Deactivation/Compliance Actions (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
(Cont'd)			Complete CDR and initiate a cost funded project for the conversion of F-Canyon's americium/curium solution. Continue design and construction of the upgraded canyon exhaust system.
	$ 0	$ 0	$ 0
	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Continue storage and surveillance activities for plutonium and other solid nuclear materials in the 235-F and 247-F vaults. Complete installation of NDA equipment and initiate measurement of plutonium-239 materials stored in 235-F vaults.
	$ 0	$ 0	$ 0
	Activities were funded by Defense Programs.	Activities are funded by Defense Programs.	Produce approximately 4.8 kg of Pu-238 oxide. Pending future NEPA decisions, process and convert to oxide the remaining Pu-242 solution (approximately 1,000 gallons). Continue preparations for H-Canyon startup for dissolution of SRS reactor fuel in FY 1997. Continue the upgraded canyon exhaust system project and decontamination and dismantlement of old HB-Line. Begin transfer of diluted uranium solutions from HA-Line to FA-Line.
	$ 0	$ 0	$ 0
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 44,024
Deactivation/Compliance Actions	$ 106,976	$ 124,868	$ 208,719

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Landlord

The Landlord category funds all activities that support overall infrastructure and base program costs when the Office of Nuclear Materials and Facilities Stabilization (EM-60) has been designated as: (a) landlord, or (b) the responsible manager of a transferred facility when EM-60 is not the landlord for the overall site. This category includes general hotel services that are not facility or process-specific (for example, safeguards and security services, electric power, etc.). Excluded are facility or process-unique services (e.g., special negative ventilation systems, nitric acid storage tanks, etc.).

Specific activities funded within this category includes:

- Common support systems including: roads, bridges, dams, utilities (i.e., general site heating, ventilation, and air-conditioning (HVAC), electrical distribution, potable water, steam, wage, etc.), transportation, ground maintenance, shops, safeguards and security systems, communications, automated data processing/information systems, cafeterias, medical services, laundry services, inventories, general site training and administrative facilities, and sitewide firefighting systems and stations.

- Repair, replacement, restoration and demolition of infrastructure and common support systems

- Real property management (to include configuration control)

- Capital equipment procurement, maintenance and management activities

- Environmental, Safety and Health site-wide programs (e.g., asbestos abatement and air, surface water, soil, and groundwater quality management programs)

- Quality assurance functions related to landlord activities

- Capital Assets Management Plan (CAMP)/Conditional Assessment Survey (CAS) programs

- General site training and emergency preparedness activities

- Site development and planning activities (which are unrelated to transition program planning)

- Landlord-related activities specifically undertaken in response to binding commitments (including compliance orders, court decisions, and/or consent agreements) with Federal, state, and local authorities

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II. A. Summary Table: Landlord

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ALBUQUERQUE				
Pinellas Plant				
Operating Expenses	$ 0	$ 0	$ 26,137	$ 26,137
Construction	0	0	2,815	2,815
Subtotal, Pinellas Plant	$ 0	$ 0	$ 28,952	$ 28,952
Subtotal, ALBUQUERQUE	$ 0	$ 0	$ 28,952	$ 28,952
IDAHO				
Operating Expenses	$ 65,827	$ 34,388	$ 34,728	$ 340
Capital Equipment	11,579	8,266	8,498	232
Construction	28,946	33,210	44,200	10,990
Subtotal, IDAHO	$ 106,352	$ 75,864	$ 87,426	$ 11,562
OHIO				
Mound Plant				
Operating Expenses	$ 0	$ 0	$ 26,852	$ 26,852
Construction	0	0	2,385	2,385
Subtotal, Mound Plant	$ 0	$ 0	$ 29,237	$ 29,237
Subtotal, OHIO	$ 0	$ 0	$ 29,237	$ 29,237
RICHLAND				
Operating Expenses	$ 14,884	$ 15,551	$ 11,500	$ -4,051
Capital Equipment	2,942	9,500	8,000	-1,500
Construction	30,240	25,322	9,300	-16,022
Subtotal, RICHLAND	$ 48,066	$ 50,373	$ 28,800	$ -21,573
ROCKY FLATS				
Operating Expenses	$ 69,381	$ 88,191	$ 98,454	$ 10,263
Capital Equipment	5,367	826	5,100	4,274
Construction	13,700	17,081	27,800	10,719
Subtotal, ROCKY FLATS	$ 88,448	$ 106,098	$ 131,354	$ 25,256
SAVANNAH RIVER				
Operating Expenses	$ 0	$ 0	$ 171,210	$ 171,210
Capital Equipment	0	0	21,925	21,925
Construction	0	0	40,390	40,390
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 233,525	$ 233,525
Total, Landlord	$ 242,866	$ 232,335	$ 539,294	$ 306,959

II. B. Laboratory and Facility Funding Table: Landlord

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Hanford Site	$ 44,566	$ 49,373	$ 28,800	$ -20,573
Idaho Chemical Processing Plant	67,490	27,510	36,703	9,193
Idaho National Engineering Lab	38,862	48,354	50,723	2,369
Mound Plant	0	0	29,237	29,237
Pacific Northwest Lab	3,500	1,000	0	-1,000
Pinellas Plant	0	0	28,952	28,952
Rocky Flats Plant	88,448	106,098	131,354	25,256
Savannah River Site	0	0	233,525	233,525
Total, Landlord	$ 242,866	$ 232,335	$ 539,294	$ 306,959

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Landlord			
ALBUQUERQUE			
Pinellas Plant			
Operating Expenses	Activities funded by Defense Programs.	Activities funded by Defense Programs.	Supports management and maintenance of the facility in a safe and responsible manner in compliance with the requirements of the Department of Energy Orders and applicable laws while carrying out Environmental Management's mission. This includes general maintenance of plant systems; minimum required security; payment of taxes and utility bills; support for waste management, environmental, safety and health activities; and the managerial support to carry out EM missions.
	$ 0	$ 0	$ 26,137
Construction	Activities funded by Defense Programs.	Activities funded by Defense Programs.	Supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 0	$ 0	$ 2,815
Subtotal, Pinellas Plant	$ 0	$ 0	$ 28,952
Subtotal, ALBUQUERQUE	$ 0	$ 0	$ 28,952

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III. Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
IDAHO			
Operating Expenses	Provided environmental compliance and corrections, engineering and graphics support, quality assurance, facilities maintenance, and Capital Asset Management Process/Condition Assessment Survey (CAMP/CAS) activities for 130 buildings and 1800 ICPP employees in the deactivation and environmental management programs at the Idaho Chemical Processing Plant (ICPP). Activities included: operated and maintained thirty utility systems, 453 major pieces of equipment and provided 40,000 lb/hour steam to support the ICPP; coordinated operations and maintenance on 10,000 work orders.	Continue to provide facilities maintenance, operating funded projects, and CAMP/CAS activities for 130 buildings and 1595 ICPP employees in the deactivation and environmental management programs at the ICPP. Activities include: operate and maintain thirty utility systems, 453 major pieces of equipment and provide 40,000 lb/hour steam to support 130 buildings; provide qualification/requalification training to 900 crane and forklift operators, thirty-seven instrumentation and control mechanics, twenty electricians, forty utility operators, and fifty laboratory and pilot plant personnel.	Continue to provide facilities maintenance, operating funded projects, and CAMP/CAS activities for 130 buildings and 1450 ICPP employees in the deactivation and environmental management programs at the ICPP. Activities include: operate and maintain thirty utility systems, 453 major pieces of equipment and provide 40,000 lb/hour steam to support 130 buildings; provide qualification/requalification training to crane and forklift operators, thirty-seven instrumentation and control mechanics, twenty electricians, forty utility operators, and fifty laboratory and pilot plant personnel.
	Provided construction project planning and project management activities for forty-five General Plant Projects (GPP); and thirteen line item projects of which nineteen GPP's and two line item projects were completed.	Provide construction project planning and project management activities for forty-four GPP and eleven line item projects completing eighteen GPP's and two line item projects.	Provide construction project planning and project management activities for thirty-seven GPP and ten line item projects of which sixteen GPP's and two line item projects will be completed.
	Activities completed and moved to Program Support in FY 1995 included: operational support and coordination; environmental compliance; engineering and graphics support, and quality assurance. Environment, Safety and Health corrections and safety functions moved to Surveillance and Maintenance in FY 1995. Facility maintenance and operations funded projects, CAMP/CAS, and utilities moved to Landlord in FY 1995.	Complete six Technical Safety Appraisal corrective actions, three Structural/Seismic Evaluations, twenty-seven Safety and Health Corrective Actions, and five Tiger Team Corrective Action Plans.	Complete four Technical Safety Appraisal corrective actions, three Structural/Seismic Evaluations, thirty Safety and Health Corrective Actions, five Tiger Team Corrective Action Plans.
		Provide sitewide landlord services (emergency preparedness, environmental monitoring, site planning, etc.) to the 9,750 INEL employees and 508 buildings at nine facilities at the Idaho National Engineering Laboratory and in Idaho Falls.	Provide sitewide landlord services (emergency preparedness, environmental monitoring, site planning, etc.) to the 8,854 INEL employees and 507 buildings at nine facilities at the INEL and in Idaho Falls.

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III. Landlord (Cont'd):
IDAHO (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	$ 65,627	$ 34,388	$ 34,728
Capital Equipment	Purchased capital equipment to support the environmental management mission which included: vacuum system; quad mass spectrometer; digital oscilloscope; construction crane; motor vehicles; video badging image server; and other miscellaneous industrial, laboratory, electronic, and computer equipment. Closed out 161 prior year General Plant Capital Expense projects.	Purchase capital equipment to support the environmental management mission which includes: Information Resources Management equipment to upgrade communication systems; network infrastructure, and business main frame computer used by the entire site; ten Sedan type light vehicles; three forklift replacements; truck mounted drilling rig; and other miscellaneous industrial, laboratory, electronic, and computer equipment. Convert five diesel buses to Liquid Natural Gas types.	Purchase capital equipment to support the environmental management mission which include: 100-ton hydraulic crane; heavy rescue vehicle; chilled water heat exchanger; robotics; diesel fuel boiler; and other miscellaneous industrial, laboratory, electronic, and computer equipment. Funding requested to procure a Business Computer System Upgrade I.
	$ 11,579	$ 8,266	$ 8,498
Construction	Supported construction projects associated with the Operating Expense activity. The detail scope and funding profile were defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Supports construction projects associated with the Operating Expense activity. The detail scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Continue to support construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 28,946	$ 33,210	$ 44,200
Subtotal, IDAHO	$ 106,352	$ 75,864	$ 87,426

III. Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
OHIO			
Mound Plant			
Operating Expenses	Activities funded by Defense Programs.	Activities funded by Defense Programs.	Support landlord activities at the Mound Plant; including safety and health, surveillance and maintenance, plant engineering, environmental base, and site services. Funding has been prioritized to emphasize cost savings, risk reduction, and completion of compliance activities.
	$ 0	$ 0	$ 26,852
Construction	No activity.	No activity.	Funding supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 0	$ 0	$ 2,385
Subtotal, Mound Plant	$ 0	$ 0	$ 29,237
Subtotal, OHIO	$ 0	$ 0	$ 29,237

III. Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
RICHLAND			
Operating Expenses	Provided core landlord services to all site programs in support of all environmental management activities occurring throughout the 560 square miles of Hanford land and 6,460,000 square feet of facilities which support approximately 18,500 people. Activities included: program management; Capital Asset Management Process (CAMP) site planning and development of specific CAMP procedures; National Environmental Policy Act (NEPA) documentation; inspection and analysis of 1,000,000 square feet of facilities; prioritization of the remaining 5,460,000 square feet of facilities; and issuance of four planning and analysis reports.	Provide core landlord services to all site programs in support of all environmental management activities occurring throughout the 560 square miles of Hanford land and 6,460,000 square feet of facilities which support approximately 17,500 people. Activities include: program management; CAMP site planning and implementation of specific CAMP procedures; National Environmental Policy Act (NEPA) documentation; complete implementation of condition assessment survey procedures; inspection and analysis of an additional 1,000,000 square feet of facilities; and issuance of four planning and analysis reports.	Continue to provide core landlord services to all site programs in support of all environmental management activities occurring throughout the 560 square miles of Hanford land and 6,460,000 square feet of facilities which support approximately 16,500 people. Activities will include: program management; CAMP site planning and implementation of specific CAMP procedures; inspection and analysis of an additional 1,000,000 square feet of facilities; update the Hanford Site Development Plan; and completion of regional plans for the 200, 300, and 400 areas.
	Conducted demolition and maintenance of infrastructure facilities for all site programs in support of environmental management mission assignments occurring throughout the 560 square miles of Hanford land and 6,460,000 square feet of facilities which support approximately 18,500 people. Activities included: replaced 211,916 square feet of roofs; continued asbestos removal; repaired structural, plumbing, and heating, ventilation and air conditioning (HVAC) units in general purpose facilities sitewide; demolished 23,458 square feet of general purpose facilities, including the onsite laundry.	Conduct demolition and maintenance of infrastructure facilities for all site programs in support of waste management and environmental restoration mission assignments occurring throughout the 560 square miles of Hanford land and 6,338,542 square feet of facilities which support approximately 17,500 people. Activities include: replacing the roofs of buildings 282EA, 318, 384, 1901X, along with several smaller facilities to address safety deficiencies and violations; replacing HVAC systems for buildings 2704W and 277W; repairing structural, plumbing, and HVAC units in general purpose facilities sitewide; demolishing approximately 32,000 square feet of facilities; continuing asbestos removal; completing renewed safety basis documentation for Building 324 and start documentation for Building 325.	Continue to conduct demolition and maintenance of infrastructure facilities for all site programs in support of environmental management mission assignments occurring throughout the 560 square miles of Hanford land and 6,306,542 square feet of facilities which support approximately 16,500 people. Activities include: replacing roofs on eight facilities to address safety deficiencies and violation; HVAC systems in two facilities; refurbishing facilities in the northern part of the site and at the Pacific Northwest Laboratory general purpose facilities; demolishing approximately 71,000 square feet of facilities; removing asbestos; completing renewed safety basis documentation for Building 325; and updating renewed documentation for Building 324.

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III. Landlord (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Conducted pre-construction and post-construction technical and general activities for infrastructure capital equipment, general plant, and line item projects for all site programs in support of the environmental management mission assignments occurring throughout the 560 square miles of Hanford land and 6,460,000 square feet of facilities which support approximately 18,500 people. Activities included thirteen line item projects, twenty-one capital equipment activities, and ten general plant projects.	Conduct pre-project and post-project technical and general activities for infrastructure capital equipment, general plant, and line item projects for all site programs in support of the environmental management mission assignments occurring throughout the 560 square miles of Hanford land and 6,438,542 square feet of facilities which support approximately 17,500 people. Identified workload includes: fourteen line item projects, twenty-six capital equipment activities, and ten general plant projects.	Continue to conduct pre-project and post-project technical and general activities for infrastructure capital equipment, general plant, and line item projects for all site programs in support of waste management and environmental restoration mission assignments occurring throughout the 560 square miles of Hanford land and 6,406,542 square feet of facilities which suppor approximately 16,500 people. Identified workload plans for: eight line item projects, thirty-one capital equipment activities and twelve general plant projects. Activities include: elimination of safety risks in the 200-Area electrical distribution system; and replacement of microwave systems on nearby mountain tops with fiber optic loops in according with DOE Order 1230.2.
	$ 14,884	$ 15,551	$ 11,500
Capital Equipment	Procured infrastructure capital equipment items, not related to construction, for all site programs in support of waste management and environmental restoration mission assignments occurring throughout the 560 square miles of Hanford land and 6,460,000 square feet of facilities which support approximately 18,500 people. Annual procurement made for the following equipment areas: automated data processing, electrical, steam, water, sewer, fire protection, laboratory support, medical services, craft shops, and telecommunications. Areas of increased emphasis included: inter-area communication network, heavy automotive replacements, equipment replacements for business and	Procure infrastructure capital equipment items, not related to construction, for all site programs in support of waste management and environmental restoration mission assignments occurring throughout the 560 square miles of Hanford land and 6,438,542 square feet of facilities which support approximately 17,500 people. Activity includes procuring: engineering analysis workstations, SCADA computer replacement, dosimetry and health physics equipment, calibration & analytical equipment. New work scope includes procurement of: architect/engineer construction equipment and buyout of mobile office leases.	Procure infrastructure capital equipment items in support of waste management and environmental restoration mission assignments occurring throughout the 560 square miles of Hanford land and 5,406,542 square feet of facilities which support approximately 16,500 people. Areas which are planned for increased activity include: heavy mobile equipment, automated mapping and facilities management system (phase-1), new technology data storage, database workstations, whole body counters, and replacements of industrial hygiene test equipment.

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III. Landlord (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)	information services, and Material Safety Data Sheet System.		
	$ 2,942	$ 9,500	$ 8,000
Construction	Supported construction projects associated with the Operating Expense activity. The detailed scope and funding profile were defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Support construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Continue to support construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 30,240	$ 25,322	$ 9,300
Subtotal, RICHLAND	$ 48,066	$ 50,373	$ 28,800
ROCKY FLATS			
Operating Expenses	The Rocky Flats (RF) Radionuclide Air Effluent Emissions Monitoring Program Plan was completed and submitted to Environmental Protection Agency Region VIII.	No activity.	No activity.
	Provided site support for: maintaining adequate inventories of store stock items, spare parts, and other plant consumable items; performing testing, engineering, procedures development, criticality support, code verification and validation and worker training; installing site-wide alarms and communications for safeguards and security, expense projects, and conducting asbestos abatement and operational readiness reviews.	Continue site support for: adequate inventories of store stock items, maintenance items, spare parts and other plant consumable items. Provide limited support to perform testing, engineering, procedure development, criticality support, code verification and validation, worker training, the Systematic Evaluation Program (SEP); installing site-wide alarms and communications for safeguards and security, expense projects, and conducting asbestos abatement and operational readiness reviews.	Continue site support of Electronic Maintenance, SEP, Asbestos Abatement Program, and maintaining inventory of store stock items, maintenance items, spare parts, and other plant consumable items. Perform Operational Safety Reviews. Prepare program plans and implementation plans for achieving compliance with 10CFR83X series Price Anderson Nuclear Safety Rules. Achieve compliance within the schedules mandated in each regulation, based upon rule effective dates: 10CFR830.120 (Quality Assurance) plans submitted by November 4, 1995; 10CFR835 (Occupational Radiation Protection) plans submitted by January 1, 1995; and

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Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)			other plans as required by rules based on their effective dates. Develop preventive maintenance procedures for more than 100 pieces of heating, ventilation, and air conditioning and refrigeration equipment, fire water systems, building motor control centers, main power automatic transfer switches and transformers, and selected hoisting and rigging equipment.
	Conducted sitewide air, water and soil monitoring activities necessary to demonstrate that Environmental Protection Agency, Colorado Department of Health, and Department of Energy requirements were met. These activities included: air sampling and analysis; air dispersion modeling; Federal and State air permit development and submittal for approval; radiological National Emissions Standards for Hazardous Air Pollutants compliance; chemical tracking and control per Resource Conservation and Recovery Act (RCRA) as well as Superfund Amendments and Reauthorization Act; preparedness support; groundwater well abandonment and replacement program; annual and quarterly RCRA groundwater monitoring reporting; groundwater flow and transport modeling; soil monitoring, and assessment; site characterization; surface water and sediment monitoring; surface water compliance activities associated with the Clean Water Act; Federal Facilities Compliance Agreement and National Discharge Elimination System permits; Rocky Flats Plant buffer zone and watershed management;	Continue sitewide air, water, and soil monitoring activities necessary to demonstrate the Environmental Protection Agency, Colorado Department of Health, and Department of Energy requirements are being met. These activities include: air sampling and analysis; air dispersion modeling; Federal and State air permit development and submittal for approval; radiological National Emission Standards for Hazardous Air Pollutants compliance; chemical tracking and control per RCRA as well as Superfund Amendments and Reauthorization Act; emergency preparedness support; and groundwater well monitoring. The High-Efficiency Particulate Air (HEPA) support and site characterization is planned for the Underground Storage Tanks line item contruction project. Develop design criteria for an Expanded Selective Alpha Air Monitoring (SAAM) subproject under the Health Physics/Environmental Projects line item construction project.	Perform 4,000 air, surface water, and groundwater samples. Complete data analysis, modeling, and reporting for the RF site and surrounding community. Perform HEPA filter receipt inspection detailed operating procedure testing for 4,000 RF HEPA filters and 30,000 respirators. Perform approximately 162 quarterly RF Limiting Conditions of Operation (LCO) surveillances. Perform maintenance on 600 SAAM systems, 11 building criticality detection and warning systems. Maintain approximately 1,200 IBM-PC's, 1,100 hand-held radios, 90 VCR's, and 6,000 pagers. Manage plantwide chemical inventory serving 90 buildings with 70,000 containers, staying compliant with Superfund Amendments and Reauthorization Act/Emergency Planning and Community Right-To-Know Act. Implement changed requirements for permitting operational controls and

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III. Landlord (Cont'd):
ROCKY FLATS (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	dam upgrades; and environmental science training.		reporting for effluents, air, and water. Introduce 43 new samplers and complete 600 ambient air analyses from 53 locations for plutonium, americium, uranium, and beryllium. Upgrade 2% gaging stations for water to include automatic sampling, refrigeration, and radiotelemetry of data.
	Workforce restructuring activities funded by Defense Programs.	Workforce restructuring activities funded by Defense Programs.	Rocky Flats has transitioned to a new mission of environmental cleanup, management, and restoration that requires different skills than those needed for our past production role. Workforce restructuring activities for FY 1996 will be funded under the Landlord Program to cover outplacement, career assistance, severance pay, benefits, administration costs to run the program, etc.
	Previously funded under Program Integration.	Previously funded under Program Integration.	Emergency Management, and Health and Safety Programs that were previously funded on an indirect basis are planned to be funded by Landlord in FY 1996. Health and Safety Programs provide technical direction, expertise and support to develop, implement, and manage the site occupational and environmental radiation protection programs. Emergency operations encompasses maintenance and operations of the Emergency Operations Center, occurrence notification and reporting, and the site drill and exercise program.

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III. Landlord (Cont'd):
ROCKY FLATS (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	No activity.	Negotiate a reduced sampling regimen for the National Emission Standards for Hazardous Air Pollutants (NESHAP) permit and install shrouded probes and modified sampling locations within the Representative Effluent Samplers Capital Improvement Project. Reduce the required monthly composite analysis from 53 to 9 emission points.	Perform monthly analyses from nine emission points.
	Provided operating expense funding support for general plant project and line item construction projects including: National Environmental Policy Act (NEPA) documentation, conceptual design reports (CDR), project management; and post-decisional activities such as operational readiness reviews, hot system tests, and operational procedure writing. The NEPA support and site characterization is planned for the Underground Storage Tanks line item construction project. Updated CDR's for FY 1996 line item construction projects: Domestic Fire and Water Replacement and Utilities Refurbishment Design Criteria.	Provide operating expense funding to support construction line items (i.e., Underground Storage Tanks, Infrastructure Replacement and the Master Safeguards and Security Agreement/Material Surveillance Task Force [MSSA/MSTF] Security Upgrade).	Provide operating expense funding to support construction line items (i.e., Underground Storage Tanks, Infrastructure Replacement, Air Monitoring Improvement, MSSA/MSTF Security Upgrade, and Domestic and Fire Water System Refurbishment).
	$ 69,381	$ 88,191	$ 98,454
Capital Equipment	Purchased required RF Basic Capital Equpiment (BCE). Purchased Nitrogen Plant used to provide an inert gas atmosphere for storage vaults for the storage of Special Nuclear Materials. Nitrogen is also used to prevent fires in the process glove boxes. The Nitrogen Plant was previously being leased under a lease-to-own contract.	Purchase required RF Basic Capital Equipment (BCE) to include a waste system evaporator, personnel contamination monitors, Self-Contained Breathing Apparatus (SCBA) charging system, telephone system upgrades, replacement of an emergency medical unit and miscellaneous capital equipment.	Purchase required RF Basic Capital Equipment (BCE) to include an Emergency Body Counter, Mobile Radiological Assessment Vehicle, Liquid Scintillation Counters, Extremity Dosimetry System, Alpha Spectroscopy Analysis System, and an IBM Right Sizing Enhancement System. In addition, several miscellaneous capital equipment purchases are planned (i.e., forklifts, atom absorption equipment, snow blade pusher, large scale plotters, etc. This equipment will

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III. Landlord (Cont'd):
ROCKY FLATS (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)			provide updated radiation measure equipment for the site.
	$ 5,367	$ 826	$ 5,100
Construction	Supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Funding supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.	Continue to support construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 13,700	$ 17,081	$ 27,800
Subtotal, ROCKY FLATS	$ 88,448	$ 106,098	$ 131,354
SAVANNAH RIVER			
Operating Expenses	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Provides funds for infrastructure base program services which include: upkeep of 143 miles of primary roads; maintenance of 60 bridges; medical, radiological, industrial hygiene, safety services; maintenance for 120 fixed radio stations, 1600 portable units, 1100 mobile units, repeater stations, and pagers; provide transportation services; maintain of emergency diesel generators, air compressors, portable pumps, generators, forklifts, boats, trailers, etc.; upkeep of approximately 1000 buildings, 190 miles of power lines, 51 miles of water piping, 64 miles of railroads, and 20 sanitary treatment plants; provide sitewide utility services; provide central stores inventory including valves, motors, instrumentation, regulators, heaters, pumps, filters, strainers, and gauges; and house 14,720 employees in

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III. Landlord (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)			office space comprised of permanent space, trailers, and leased space.
	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Provides funds for infrastructure for up-front planning and operation for infrastructure Capital Equipment (CE) and General Plant Projects (GPP) projects. Provide up-front planning for line item projects scheduled for authorization after FY 1996 including: 904-A Trench Leak Repairs, Liquid Waste Handling Facility Upgrade, and the E3S Devel, Maintenance and Simulation Facility. Support Other Project Costs (OPC) associated with 16 Line Item projects; provides funds to review and approve definitive design, to develop operating and maintenance procedures, to develop training and maintenance manuals, to train operators and maintenance personnel, to obtain operating permits, to perform system testing, and to place system into operation.
	$ 0	$ 0	$ 171,210
Capital Equipment	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Provide funds for 41 Capital Equipment projects, with a Total Estimated Cost (TEC) of more than $250,000, to support continuity of operations and ensure availability of replacement parts; and to replace and upgrade equipment necessary in support of the surveillance and maintenance program, and to maintain supporting services. Maintains support to the Savannah River Technology Center (SRTC) operations; and infrastructure projects. Three major computer items are supported:

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III. Landlord (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Capital Equipment (Cont'd)			The CCF Technology Upgrade ($4.5 million): This project will replace the IBM 3090-40J computer system with new technology. The IBM 3090-40J has been operating at 100 percent capacity during the prime shift and above 80 percent capacity on offshifts since early FY 1993. This processing power is being to to administrative, business, and scientific/engineering applications. The IBM 3090/40J has reached the end of its life cycle. New Tech Transaction Servers ($2.5 million): New technology transaction and database processing capacity will be purchased and installed in the Central Computer Facility at SRS. This capacity will augment the current capabilities to process transactions that demand high throughput, large amounts of data, and rapid response time. This project will allow the Site to move to a client/server environment. SRSnet Upgrades ($3.0 million): Data communications equipment will be purchased to utilize RTS-provided site fiber optic cable system to build high speed data networks in support of site applications: client/server computing, data query transfers, multi-media, work group computing, data backup and recovery, etc. Utilization of Asynchronous Transfer Mode Technology (STM) is expected.
	$ 0	$ 0	$ 21,925

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III. Landlord (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Construction	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Funding supports construction projects associated with the Operating Expense activity. The detailed scope and funding profile are defined in the Construction Funded Project Summary and Construction Project Data Sheets.
	$ 0	$ 0	$ 40,390
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 233,525
Landlord	$ 242,866	$ 232,335	$ 539,294

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Program Direction

Includes direct and indirect base program costs to maintain the Federal staff (Headquarters and DOE Site) to manage Environmental Management programs.

Specific activities funded within this category include: Federal staff costs, which include salaries, benefits, travel, equipment, supplies, and permanent change of station requirements.

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II. A. Summary Table: Program Direction

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
HEADQUARTERS	$ 5,670	$ 5,184	$ 7,967	$ 2,783
OPERATIONS OFFICES				
Operating Expenses	47,209	51,485	89,157	37,672
Capital Equipment	0	105	178	73
Subtotal, OPERATIONS OFFICES	$ 47,209	$ 51,590	$ 89,335	$ 37,745
Total, Program Direction	$ 52,879	$ 56,774	$ 97,302	$ 40,528

II. B. Laboratory and Facility Funding Table: Program Direction

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 0	$ 330	$ 3,249	$ 2,919
Chicago Operations Office	0	0	192	192
Idaho Operations Office	9,810	10,450	4,468	-5,982
Oak Ridge Operations Office	0	0	201	201
Oakland Operations Office	0	0	535	535
Ohio Field Office	0	0	3,698	3,698
Richland Operations Office	26,013	26,774	26,805	31
Rocky Flats Office	11,386	14,036	18,000	3,964
Savannah River Operations Office	0	0	32,187	32,187
Washington Headquarters	5,670	5,184	7,967	2,783
Total, Program Direction	$ 52,879	$ 56,774	$ 97,302	$ 40,528

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction			
HEADQUARTERS	Funding by Object Class:		
	Personnel		
	Compensation $ 4,082	$ 3,733	$ 5,752
	Benefits 1,223	933	1,426
	Travel 365	518	789
	Contractor Services 0	0	0
	$ 5,670	$ 5,184	$ 7,967
	Provided for 51 full-time equivalents (FTE) at Headquarters (HQ) to manage the Office of Nuclear Materials and Facilities Stabilization activities.	Provides for 81 FTE's at HQ to manage the Office of Nuclear Materials and Facilities Stabilization. An additional 12 FTE's have been provided to this program through the Office of Environmental Management's FTE pilot program. Funding for these FTE's will be identified through productivity savings during the fiscal year and transferred to the Program Direction account.	Provides for 72 FTE's at HQ to manage the Office of Nuclear Materials and Facilities Stabilization activities.
	51.0 FTE $ 5,670	81.0 FTE $ 5,184	72.0 FTE $ 7,967
OPERATIONS OFFICES			
Operating Expenses	Funding by Object Class:		
	Personnel		
	Compensation $33,990	$37,069	$58,740
	Benefits 8,498	9,267	16,020
	Travel 4,721	5,149	7,550
	Contractor Services 0	0	6,847
	$47,209	$51,485	$89,157
	Provided for 487 full-time equivalents (FTE) which supported the Office of Nuclear Materials and Facilities Stabilization program management and administrative functions at the various departmental operations offices.	Provides for 643 FTE's which support program management and administrative functions at the various departmental operations offices. An additional 164 FTE's have been provided to the Office of Nuclear Materials and Facilities Stabilization program through the Office of Environmental Management's	Provides for 988 FTE's which will support the program management and administrative functions at the various departmental operations offices. These FTE levels reflect a reduction of 32 FTE's due to the transfer of Idaho's Radiological Environmental Science Laboratory from the Office of Nuclear

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III. Program Direction (Cont'd):
OPERATIONS OFFICES (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)		(EM) pilot program. Funding for these FTE's will be identified through productivity savings during the fiscal year and transferred to the Program Direction account.	Materials and Facilities Stabilization to the Office of Compliance and Program Coordination. The EM program was allocated an additional 400 FTE's for FY 1996. These FTE's will be allocated solely to the field based on a bid process similar to that conducted in FY 1994. This process will determine the distribution of these FTE's by program, by field office based on additional efficiencies to be achieved. Funding will be provided by reallocation of funds redirected from savings realized.
	487.0 FTE $ 47,209	643.0 FTE $ 51,485	988.0 FTE $ 89,157
Capital Equipment	No activity.	Provides funding for the purchase of multiple file servers to accommodate additional requested full-time equivalents' (FTE) needs at the Richland Operations Office (RL).	Provides funding for the purchase of multiple file servers to accommodate additional requested FTE needs at RL.
	$ 0	$ 105	$ 178
Subtotal, OPERATIONS OFFICES	487.0 FTE $ 47,209	643.0 FTE $ 51,590	988.0 FTE $ 89,335
Program Direction	538.0 FTE $ 52,879	724.0 FTE $ 56,774	1060.0 FTE $ 97,302

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

NUCLEAR MATERIALS AND FACILITIES STABILIZATION

I. Preface: Program Support

The Program Support category funds all direct and indirect activities that provide technical support and contract expertise to assist the Federal staff with its line management and oversight functions. This category focuses on verifying, evaluating, and/or assessing programmatic activities, not the initial development or generation of those activities.

Specific activities funded within this category include:

- Litigation activities
- Verifying building characterization determinations and field surveys
- Reviewing transition management plans
- Evaluating alternatives for facility end-state or project end-point conditions
- Developing facility data tracking systems
- Developing criteria for prioritizing deactivation activities
- Assessing compliance of proposed transfer facilities with regulatory requirements
- Tribal and State grants
- Economic development initiatives
- Displaced worker programs

II. A. Summary Table: Program Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
ALBUQUERQUE	$ 0	$ 0	$ 15	$ 15
HEADQUARTERS	9,000	7,715	11,707	3,992
RICHLAND				
Operating Expenses	33,255	41,225	43,507	2,282
Capital Equipment	25	0	0	0
Subtotal, RICHLAND	$ 33,280	$ 41,225	$ 43,507	$ 2,282
ROCKY FLATS				
Operating Expense	$ 5,000	$ 5,000	$ 24,350	$ 19,350
Subtotal, ROCKY FLATS	$ 5,000	$ 5,000	$ 24,350	$ 19,350
SAVANNAH RIVER				
Operating Expense	$ 0	$ 0	$ 64,257	$ 64,257
Capital Equipment	0	0	845	845
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 65,102	$ 65,102
Total, Program Support	$ 47,280	$ 53,940	$ 144,681	$ 90,741

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II. B. Laboratory and Facility Funding Table: Program Support

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 0	$ 0	$ 15	$ 15
Hanford Site	33,280	41,225	11,550	-29,675
Richland Operations Office	0	0	31,957	31,957
Rocky Flats Office	5,000	5,000	24,350	19,350
Savannah River Site	0	0	65,102	65,102
Washington Headquarters	9,000	7,715	11,707	3,992
Total, Program Support	$ 47,280	$ 53,940	$ 144,681	$ 90,741

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Program Support			
ALBUQUERQUE	No activity. $ 0	No activity. $ 0	Provide funding to allow field representatives at the Albuquerque Operations Office to use contractor services for unique specialities in support of Environmental Management (EM) activities at Albuquerque sites. $ 15
HEADQUARTERS	Provided technical expertise to support the following activities: development of criteria and recommendations on end-use of transferred facilities and methods for managing surplus material, including coordination with other Environmental Management programs on alternative uses, decontamination plans, and final disposition; facility/building characterizations, verification of previously completed characterizations, and site surveys; system modeling; development of criteria for prioritizing of facility deactivation; establishment of a comprehensive Surplus Facility Inventory and Assessment (SFIA) database which will list facilities, transfer date, nature and extent of contamination, and other essential data; development of EM acceptance criteria and standards for facility transfer; assess regulatory compliance status of facilities proposed for transfer, including Federal and state requirements, permits, interagency agreements, corrective actions, health and safety obligations, and Department of Energy (DOE) Orders; and review of recommended enhancements to transition management plans. ($9,000)	Continue to provide technical expertise to support the following activities: development of criteria and recommendations on end-use of transferred facilities and methods for managing surplus material, including coordination with other EM programs on alternative uses, decontamination plans, and final disposition; facility/building characterizations, verification of previously completed characterizations, and site surveys; system modeling; development of criteria for prioritizing of facility deactivation; establishment of a comprehensive SFIA database which will list facilities, transfer date, nature and extent of contamination, and other essential data; development of EM acceptance criteria and standards for facility transfer; assess regulatory status of facilities proposed for transfer, including Federal and state requirements, permits, interagency agreements, corrective actions, health and safety obligations, and DOE Orders; review of recommended enhancements to transition management plans; and execution of independent cost reviews. ($7,715)	Continue to provide technical expertise to support the following activities: development of criteria and recommendations on end-use of transferred facilities and methods for managing surplus material, including coordination with other EM programs on alternative uses, decontamination plans, and final disposition; facility/building characterizations, verification of previously completed characterizations, and site surveys; system modeling; development of criteria for prioritizing of facility deactivation; maintenance of a comprehensive SFIA database which will list facilities, transfer date, nature and extent of contamination and other essential data; development of EM acceptance criteria and standards for facility transfer; assess regulatory status of facilities proposed for transfer, including Federal and state requirements, permits, interagency agreements, corrective actions, health and safety obligations, and DOE Orders; review of recommended enhancements to transition management plans; and execution of independent cost reviews. ($10,000)

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
HEADQUARTERS (Cont'd)	No activity.	No activity.	During FY 1996, all field and Headquarters elements will be involved with reviewing and updating the Surplus Facility Inventory and Assessment (SFIA) database. This effort is crucial in assisting the field and each program office as they manage their buildings and structures and plan for the transfer of surplus facilities to the Office of Nuclear Materials and Facilities Stabilization. The SFIA database is scheduled for integration with Field Management's Condition Assessment Inventory System (CAIS) and then will be interfaced with the Facility Information Management System (FIMS) by the end of FY 1996. However, collection of SFIA data will be necessary before this effort is fully implemented. Contractor support services will be required to assist in surplus facility characterization and completion of baseline assessments for facilities which are determined to be surplus. ($1,707)
	$ 9,000	$ 7,715	$ 11,707
RICHLAND			
Operating Expenses	Provided Department of Energy-Richland (DOE-RL) support service contractor activities which included: legal requirements review, Tri-Party Agreement (TPA) management services, independent cost estimation, Site Management System, safeguards and security support, quality assurance, radiation protection, and nuclear safety.	Support for RL support contractor activities include: legal requirements review, TPA management services, independent cost estimations, Site Management System, safeguards and security support, quality assurance, radiation protection, and nuclear safety.	Support DOE-RL support service contractor activities include: legal requirements review, TPA management services, independent cost estimations, Site Management System, safeguards and security support, quality assurance, radiation protection, and nuclear safety.

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III. Program Support (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Compensated Hanford "downwinders" litigation expense associated with discovery activities and about 10,000 boxes of documents to be made available for inspection. Continued to support Hanford site-wide activities such as compliance related document/correspondence control, TPA baseline management, and Washington State air emission monitoring.	Compensate Hanford "downwinders" litigation expenses. As the trial date draws closer, costly activities such as expert witness depositions and medical record exams are necessary. Continue support for Hanford site-wide activities. Support infrastructure for the Hanford Advisory Board and support the declassification of documents related to human radiation experiments.	Continue depositions, rebuttal witnesses, expert testimony, review and reproduction of documents for "downwinders" trial preparation.
	Committed to addressing back payments in lieu of taxes to Benton, Franklin, and Grant counties. Initial payments addressed outstanding claims back to 1988.	Continue to address the initial payment in lieu of taxes claim.	Continue to address the payments in lieu of taxes.
	Funded Hanford Health Information Network (HHIN) activities such as: conference on radiation and health effects; Sponsorship of four citizen advisory boards and one tribal advisory board, each with quarterly meetings; continued advertising and use of toll-free information numbers. Completed dose calculations for ten county areas, and completed three Phase I reports for Hanford Environmental Dose Reconstruction (HEDR) Project. Supported Hanford Thyroid Disease Study.	Continue to fund HHIN activities including: the inception of fifteen new publications; initiation of information archives; responding to approximately 17,500 toll-free calls annually, providing literature to 75 percent of Northwest libraries, distribution of 500,000 copies of educational material. Continuing HEDR studies to complete activities such as: prepare software package to estimate doses to individuals; determine impact of topography and atmospheric phenomena on model predictions; and determine utility of special population studies.	Continue to fund HHIN activities including: the distribution of publications; maintaining information archives; responding to approximately 17,500 toll-free calls annually, providing literature to 75 percent of Northwest libraries, distribution of 500,000 copies of educational material. Perform HEDR studies such as: implementation of special population studies; validation of air pathways model; and declassification of documents related to HEDR issues. ($4,000)
	Furnished grant to the State of Oregon to participate in Department of Energy Five-Year Plan by hosting one Tri-Party Agreement (TPA) public meeting and four Oregon Hanford Advisory Board meetings. Developed a public information program. Participated in at least one emergency response drill.	Continue to furnish grant for the State of Oregon to review and participate in Hanford cleanup activities to protect the rights and safety of Oregon citizens. Of special concern is funding for review of planning documents and work that affects groundwater, the Columbia River, emergency planning and preparedness, and waste transportation.	Continue to furnish grant to the State of Oregon to participate in DOE planning meetings, advisory boards, public information programs, review of DOE documents, and in expanding emergency planning and preparedness. ($400)

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III. Program Support (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Provided grants to the Yakama, Nez Perce, and Umatilla Indian Nations for their participation in the Department of Energy's (DOE's) Environmental Management planning efforts and the Hanford Site Specific Plans. Provided grants to Indian Nations to fund training for emergency response, review and analysis of DOE plans and policies, maintenance of Geographic Information System (GIS), development of cultural resource information, scholarships in scientific curricula, development of elementary school and public training curricula, and participation on the Hanford Advisory Board. ($1,515)	Continue to provide grants to the Yakama, Nez Perce, and Umatilla Indian Nations for their participation in DOE's Environmental Management planning efforts and the Hanford Site Specific Plans. Provide the Indian Nations with the opportunity to make informed comments on Hanford specific planning efforts. This activity will be transferred to Environmental Management's Office of Programmatic Guidance and Compliance (EM-5) in FY 1996.	No activity. ($0)
	Supplied management fee funding to the State of Washington for Tri-Party Agreement (TPA) and Resource Conservation and Recovery Act (RCRA) general support activities. These responsibilities included State staff involvement with Hanford Site RCRA program and Environmental Management's Five-Year Plan, a building lease in Richland, Washington, and Environmental Management's Waste Management permit review.	Continue to supply management fee funding to the State of Washington. In addition, provide financial support to the State of Washington in compliance with the regulatory responsibilities detailed in the TPA, the Federal Facilities Compliance Act, and RCRA.	Continue to supply management fee funding to the State of Washington for previously identified activities. Anticipate additional funding is required to cover increased cost associated with changing RCRA compliance requirements. ($4,500)
	Operated the Hanford Filter Test Facility (HFTF) for testing and distributing High-Efficiency Particulate Air (HEPA) filters for sites in Western States. The HFTF supported all WHC, PNL, and KEH organizations that depend upon HEPA filters and respirator cartridges to conduct day-to-day operations at Hanford.	Continued operating of HFIF to ensure adequate availability of qualified/certified filter testing personnel, and to ensure adequate testing and distribution of HEPA Filter.	Continue operation of HFTF to insure adequate availability of qualified/certified filter testing personnel and esure adequate testing and testing and distribution of HEPA Filter. Two Quality Assurance Technicians will be trained at the Filter Test Facility. ($1,050)

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III. Program Support (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	Supplied grant funding to Washington State for emergency preparedness planning and environmental monitoring. Successfully participated in Hanford's first emergency exercise that dealt with ingestion zone activities. The ability to coordinate activities that would potentially be required within a 50-mile ingestion planning zone was demonstrated and was considered a significant enhancement to the State's emergency management capabilities.	Supply grant funding to Washington State. Funding is used to prepare quarterly status reports on emergency preparedness and to produced annual environmental monitoring report.	Grant funding to allow the State of Washington to maintain their emergency response and environmental monitoring capabilities.
	No activity.	Provide funding for seven community-based economic development partnership projects. Projects include: Agri-Business Center to foster five new "seed" businesses within the local economy; five closely coordinated analytical studies to address impacts to site workers potentially affected by Hanford's changing mission; telecommunications upgrades and resource database development to support a science and technology park; small business partnerships to provide micro-loans to start-up and expanding businesses; Hanford Regional Planning Commission to integrate comprehensive land use planning; minority Business Resource Center to assist in the startup and successful operation of business.	In accordance with Systems Engineering cleanup mission analysis, this effort supports the Resource Transfer Function. Transfer approximately two unused Hanford assets resulting in long-term maintenance, decontamination and decommissioning (D&D), and/or disposal cost avoidance. Spinoff at least two work functions to current Hanford employees in order to downsize the workforce and provide more cost efficient service. Competitively bid at least two contracts for workscope currently being performed in-house to maximize private sector investment in the cleanup.

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III. Program Support (Cont'd):
RICHLAND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expenses (Cont'd)	No activity.	Provide funding for the Hanford Economic Transition Initiative (HETI) to outsource three major infrastructure systems and ten to fifteen support services, to promote the conversion of site assets, and to facilitate the commercialization of site technologies through establishment of seven partnerships with outside organizations. Establish Environmental Technology Enterprise zone and Environmental Business Enterprise Center.	Continue efforts to purchase commercially available technology to accomplish cleanup and science and technology missions ("buy" vs. "make") with additional goal of helping to achieve economic diversification. Manage Environmental Technology Enterprise Zone including Test and Demonstration Center, established in FY 1995. Maintain partnerships established in 1995 with Native American, regional, and local economic development organizations to enhance technology transfer and ensure regional and local private business participation in cleanup. ($2,000)
	$ 33,255	$ 41,225	$ 43,507
Capital Equipment	Procured penetrometer necessary to support High-Efficiency Particulate Air Filter Test Facility.	No activity.	No activity.
	$ 25	$ 0	$ 0
Subtotal, RICHLAND	$ 33,280	$ 41,225	$ 43,507
ROCKY FLATS			
Operating Expense	Provided resources to fund the "litigation and claims" clause of DOE Contracts DE-AC-76DP03533 and AT(2901)-1106 and the terms of the Three-Party Transfer Agreement between DOE, Rockwell International (a former Rocky Flats contractor) and EG&G Rocky Flats, Inc. Provided funds for legal fees related to continuing class actions and other civil litigation being defended by the Rockwell International Corp. and DOW Chemical Company as well as provides funds to maintain the Rockwell legal support office maintained at Rocky Flats.	Provide resources to fund the "litigation and claims" clause of DOE Contracts DE-AC-76DP03533 and AT(2901)-1106 and the terms of the Three-Party Transfer Agreement between DOE, Rockwell International (a former Rocky Flats contractor) and EG&G Rocky Flats, Inc. DOE will provide funds for legal fees related to continuing class actions and other civil litigation being defended by the Rockwell International Corp. and DOW Chemical Company as well as provides funds to maintain the Rockwell legal support office maintained at Rocky Flats.	Continue to provide resources to fund the "litigation and claims" clause of DOE Contracts DE-AC-76DP03533 and AT(2901)-1106 and the terms of the Three-Party Transfer Agreement between DOE, Rockwell International (a former Rocky Flats contractor) and EG&G Rocky Flats, Inc. DOE will provide funds for legal fees related to continuing class actions and other civil litigation being defended by the Rockwell International Corp. and DOW Chemical Company as well as provides funds to maintain the Rockwell legal support office maintained at Rocky Flats.

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III. Program Support (Cont'd):
ROCKY FLATS (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expense (Cont'd)	Activities funded by Waste Management (WM).	Activities funded by Waste Management.	Provide funding for the Agreement-in-Principle executed on June 28, 1989, between the U.S. Department of Energy and the State of Colorado for technical and financial support for state activities in environmental oversight, monitoring, access, emergency response coordination, and public awareness activities. Responsibility for funding has been transferred to the Office of Nuclear Materials and Facilities Stabilization.
	Previously funded under Program Integration.	Previously funded under Program Integration.	Update the Strategic Plan to reflect changes in mission, strategic objectives, strategies, and/or success criteria, due by September 30, 1996. Update the sitewide schedule. Perform administrative support for the liability reduction teams. Operate and maintain the RF Systems Engineering Analysis (SEA). Provide funding for Rocky Flats Field Office (RF) support service contracts. The support services will include: technical, security, and management and administration.
	$ 5,000	$ 5,000	$ 24,350
Subtotal, ROCKY FLATS	$ 5,000	$ 5,000	$ 24,350

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III. Program Support (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
SAVANNAH RIVER			
Operating Expense	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Conduct a program of natural resource management and research; provide wildland fire protection; site secondary roads, trails, and boundaries (1700 miles), conduct science education outreach programs for local community youth; and maintain 3,000 acres of vegetation; controlled burning of 16,000 to 18,000 acres annually; conduct 30 Biological Evaluations for waste site closure projects; conduct 12 plant and animal population surveys; harvest 22 million board feet of timber; plant 900 acres of longleaf and loblolly pine; and complete 12 soil restoration projects.
	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Gather baseline information; provide basic and applied research to show how ecological entities function under both SRS-induced stresses and natural conditions; integrate research programs with Site's environmental monitoring program to assure that all site operations meet environmental statutes; and gather baseline information on the long-term effects of site operations on the ecology.
	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Supports approximately 540 technical and administrative personnel to support the Federal staff in ensuring safe facility operations and compliance with Federal, state, and DOE requirements. Provides technical support services for all DOE-SR programs including environmental, safety, health, quality assurance, safeguards and security, engineering and projects, total quality management, Historically Black Colleges and Universities, federal training support, emergency preparedness, materials control and accountability,

III. Program Support (Cont'd):
SAVANNAH RIVER (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Operating Expense (Cont'd)			maintenance of the public reading room, paralegal research, preparation of NEPA documents and implementation of CRADA's. Other funded activities include payments in lieu of taxes (PILOTS), implementation of interagency agreements, and purchase of low value equipment.
	$ 0	$ 0	$ 64,257
Capital Equipment	Activities were funded by Defense Programs. ($0)	Activities are funded by Defense Programs. ($0)	Provide funds for capital equipment activities to support continuity of operations and ensure availability of replacement parts; and to replace and upgrade equipment necessary in support of the Savannah River Ecology Laboratory and the Department of Energy. Examples of equipment to be funded are office equipment to support the administrative functions of the Department of Energy and laboratory equipment for SREL.
	$ 0	$ 0	$ 845
Subtotal, SAVANNAH RIVER	$ 0	$ 0	$ 65,102
Program Support	$ 47,280	$ 53,940	$ 144,601

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

NUCLEAR MATERIALS AND FACILITIES STABILIZATION (DEFENSE)
(Tabular dollars in thousands, narrative in material whole dollars)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Revised Appropriated	FY 1995 Adjusted Appropriated	FY 1996 Request	Unapprop. Balance
GPD-171	General Plant Projects, Various Locations	N/A	N/A	18,701	15,211	34,724	0
96-D-450	Site Drainage Control, Mound Plant, Miamisburg, Ohio	13,550	0	0	0	885	12,665
96-D-461	Electrical Distribution Upgrade, Idaho National Engineering Laboratory, Idaho	14,000	0	0	0	1,539	12,461
96-D-462	Health Physics Instrument Laboratory, Idaho National Engineering Laboratory, Idaho	14,300	0	0	0	1,126	13,174
96-D-463	Central Facilities Area (CFA) Craft Shop, Idaho National Engineering Laboratory, Idaho	10,700	0	0	0	724	9,976
96-D-464	Electrical and Utility Systems Upgrade, Idaho Chemical Processing Plant, Idaho National Engineering Laboratory, Idaho	75,000	0	0	0	4,952	70,048
96-D-465	200 Area Sanitary Sewer System, Richland, Washington	33,400	0	0	0	1,800	31,600
96-D-470	Environmental Monitoring Laboratory, Savannah River Site, Aiken, South Carolina	33,000	0	0	0	3,500	29,500
							0
96-D-471	CFC HVAC / Chiller Retrofit, Savannah River Site, Aiken, South Carolina						0
	01-Replacement of 200-Ton Chiller, Unit 1 of Bldg. 777-10A	600	0	0	0	600	0
	02-Replacement of Unit 3 Chiller in Bldg. 221H	900	0	0	0	900	0
	Unappropriated Balances	43,500	0	0	0	0	43,500
Subtotal	CFC HAVC/Chiller Retrofit	45,000	0	0	0	1,500	43,500
96-D-472	Plant Engineering and Design, Savannah River Site, Aiken, South Carolina						
	01-Independent Waste Handling Facility	2,000	0	0	0	2,000	0
	02- 904-A Trench Leak Repair	1,500	0	0	0	1,500	0
	03-Liquid Waste Handling Facility Upgrade	500	0	0	0	500	0
Subtotal	Plant Engineering and Design	4,000	0	0	0	4,000	0
96-D-473	Health Physics Site Support Facility, Savannah River Site, Aiken, South Carolina	27,800	0	0	0	2,000	25,800

NUCLEAR MATERIALS AND FACILITIES STABILIZATION (DEFENSE)

(Tabular dollars in thousands, narrative in material whole dollars)

IV. A. Construction Funded Project Summary

Project No.	Project Title		TEC	Previous Appropriated	FY 1994 Revised Appropriated	FY 1995 Adjusted Appropriated	FY 1996 Request	Unapprop. Balance
95-D-155	Upgrade Site Road Infrastructure, Savannah River Site, Aiken, South Carolina	a/	10,500	0	0	0	2,900	6,850
95-D-156	Radio Trunking System, Savannah River Site, Aiken, South Carolina	a/	19,400	0	0	0	8,000	11,300
95-D-157	D-Area Powerhouse Life Extension, Savannah River Site, Aiken, South Carolina	a/	71,500	0	0	0	0	67,500
95-D-454	324 Facility Compliance / Renovation, Richland, Washington		5,800	0	0	1,500	3,500	800
95-D-456	Security Facilities Consolidation, Idaho Chemical Processing Plant, Idaho National Engineering Laboratory, Idaho		18,500	0	0	986	8,382	9,132
94-D-122	Underground Storage Tanks, Rocky Flats Plant, Golden, Colorado		12,500	0	700	2,500	5,000	4,300
94-D-401	Emergency Response Facility, Idaho National Engineering Laboratory, Idaho		13,500	0	590	5,219	5,074	2,617
94-D-412	300 Area Process Sewer Piping System Upgrade, Richland, Washington		9,900	0	1,100	7,800	1,000	0
94-D-415	Idaho National Engineering Laboratory Medical Facility, Idaho National Engineering Laboratory, Idaho		9,700	0	800	4,920	3,601	579
94-D-451	Infrastructure Replacement, Rocky Flats Plant, Golden, Colorado							
	88-01-Electrical Distribution System Replacement and Upgrade		27,353	15,103	3,100	3,760	2,940	2,450
	90-02-Building Electrical Rehabilitation		5,500	4,700	0	800	0	0
	91-03-Central Steam Plant Renovation		3,300	3,300	0	0	0	0
	93-04-Plutonium Facilities Heating, Ventilation and Air Conditioning (HVAC) Restoration		20,200	800	3,500	6,040	0	9,860
Subtotal Infrastructure Replacement			56,353	23,903	6,600	10,600	2,940	12,310
93-D-147	Domestic Water System Upgrade, Phase I and II, Savannah River Site, Aiken, South Carolina	a/	33,590	0	0	0	7,130	6,440
93-D-172	Idaho National Engineering Laboratory Electrical Upgrade, Idaho National Engineering Laboratory, Idaho		15,944	1,000	8,020	7,177	124	0
93-D-184	325 Facility Compliance/Renovation, Pacific Northwest Laboratory, Richland, Washington		6,000	1,500	3,500	1,000	0	0
93-D-185	Landlord Program Safety Compliance, Phase II, Richland, Washington		2,200	849	1,351	0	0	0
93-D-186	200 Area Unsecured Core Area Fabrication Shop, Richland, Washington	b/	0	1,000	0	4,000	0	0
92-D-123	Plant Fire / Security Alarm System Replacement, Rocky Flats Plant, Golden, Colorado		69,900	4,900	0	0	9,560	55,440

a/ The budget is being prepared on a non-comparable basis. All funding prior to FY 1996 was within the Materials Support and Other Defense Programs Appropriation.
b/ This project has been canceled due to mission change. All funding for this project was used as part of the FY 1995 unvested balance reduction.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

NUCLEAR MATERIALS AND FACILITIES STABILIZATION (DEFENSE)
(Tabular dollars in thousands, narrative in material whole dollars)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Revised Appropriated	FY 1995 Adjusted Appropriated	FY 1996 Request	Unapprop. Balance
92-D-125	Master Safeguards and Security Agreement / Material Surveillance Task Force Security Upgrades, Rocky Flats Plant, Golden, Colorado	36,800	0	3,900	2,100	7,000	23,800
92-D-181	Idaho National Engineering Laboratory Fire and Life Safety Improvements, Idaho National Engineering Laboratory, Idaho	28,000	11,000	3,200	6,880	6,883	1,017
92-D-182	Idaho National Engineering Laboratory Sewer System Upgrade, Idaho National Engineering Laboratory, Idaho	9,150	5,800	1,450	1,900	0	0
92-D-183	Idaho National Engineering Laboratory Transportation Complex, Idaho National Engineering Laboratory, Idaho	13,953	6,755	7,198	0	0	0
92-D-184	Hanford Infrastructure Underground Storage Tanks, Richland, Washington	4,300	4,000	300	0	0	0
92-D-186	Steam System Rehabilitation , Phase II, Richland, Washington	10,300	400	2,300	5,600	0	2,000
92-D-187	300 Area Electrical Distribution Conversion and Safety Improvements, Phase II, Richland, Washington	13,100	2,824	10,276	0	0	0
91-D-127	Criticality Alarm and Plant Annunciation, Rocky Flats Plant, Golden, Colorado	29,500	8,098	0	0	2,800	18,700
91-D-175	300 Area Electrical Distribution Conversion & Safety Improvements Phase I, Richland, Washington	7,800	6,300	1,500	0	0	0
90-D-149	Plantwide Fire Protection, Phase I and II Savannah River, South Carolina a/	420,000	0	0	0	0	314,641
90-D-175	Landlord Program Safety Compliance, Phase I, Richland, Washington	36,400	26,600	1,800	0	0	0
Subtotal Line Item Projects			106,831	54,385	61,302	93,920	787,050
Total Office of Nuclear Materials and Facilities Stabilization			106,831	73,066	76,513	120,644	787,050

a/ The budget is being prepared on a non-comparable basis. All funding prior to FY 1996 was within the Materials Support and Other Defense Programs Appropriation.

2479

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from the FY 1995 Congressional Budget Request are denoted with a vertical line in the left margin.)

DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Nuclear Materials and Facilities Stabilization

1. Title and Location of Project: General Plant Projects, Various Locations	2a. Project No.: GPD-171 2b. Construction Funded

SIGNIFICANT CHANGES

o In FY 1996 the Savannah River Site transferred from Defense Programs to Environmental Management.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project GPO-171, General Plant Projects, Various Locations

TEC: N/A
TPC: N/A

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 19,221	$ (520) a/	$ 18,701	$ 19,683 c/
1995	20,495	(5,284) b/	15,211	16,084 c/
1996	34,724 d/	0	34,724	24,250
1997	30,000	0	30,000	25,300
1998	0	0	0	13,319

3. Narrative:

These projects provide various items of new construction, additions, alterations, and improvements to the lands, buildings, and utility systems ~~at the Idaho, Richland, and Rocky Flats offices~~ to support health, safety, environment, general support, and other requirements at the following facilities.

Albuquerque Operations Office	$ 2,815
Idaho Operations Office	11,795
Ohio Field Office	1,500
Richland Operations Office	3,114
Rocky Flats Office	500
Savannah River Operations Office	15,000
Total, General Plant Projects	$ 34,724

The FY ~~1995~~ 1996 appropriation ~~funding~~ will be used for design, procurement, and construction activities.

a/ Adjustment reflects FY 1994 general reduction.
b/ Adjustment reflects FY 1995 Amendment ($284,000) and FY 1995 Conference mark ($5,000,000).
c/ A portion of the costs incurred against prior year uncosted obligations.
d/ The Savannah River Site transferred from Defense Programs.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-458, Site Drainage Control, Mound Plant, Miamisburg, Ohio

TEC: $13,550
TPC: $14,100

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 885	$ 0	$ 885	$ 455
1997	0	0	0	430
1998	12,665	0	12,665	7,310
1999	0	0	0	5,355

3. Narrative:

The Site Drainage Control Line Item improves the main drainage channel by widening, and then lining it with concrete. The Overflow Pond and the Special Metallurgical (SM) Pond will be sealed with impervious clay liners. The liners will be covered with reinforced concrete for protection during cleaning.

The Overflow Pond will be expanded to provide sufficient volume to contain the stormwater runoff from a 10-year frequency storm event. The pond inlets and outlets will be modified for better flow control, and an emergency spillway will be provided.

The retention basin, used to contain spills of hazardous substances, will be reconstructed. A new liquid-tight concrete retention basin capable of retaining a hazardous substance spill during normal flow conditions will be constructed.

Safeguards and Security (S&S) will not be impacted by this project.

The FY 1996 appropriation will be used to accomplish Title I and II design.

2482

I. B. Construction Funded Project Descriptive Summary

ADS# ID-6318-0

1. Project Title and Location: Project 96-D-461, Electrical Distribution Upgrade, Idaho National Engineering Laboratory, Idaho

TEC: $14,000
TPC: $14,803

Start Date: 2nd Qtr. FY 1996 Completion Date: 1st Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 1,539	$ 0	$ 1,539	$ 1,539
1997	9,310	0	9,310	2,396
1998	3,151	0	3,151	8,481
1999	0	0	0	1,584

3. Narrative:

The Idaho National Engineering Laboratory's (INEL) Electrical Distribution Upgrade provides for the planning, management, design, procurement, and construction activities to upgrade portions of the INEL electrical distribution system that provides numerous users with reliable electrical power. This project is necessary to provide reliability and maintainability of the electrical distribution system.

The upgrade consists of 1) resolution and correction of code and standard deficiencies, and 2) correction of age, deterioration and obsolescence conditions. The extent of scope of this project will start at the secondary connections of the 138 KV stepdown transformers and go to the service disconnects at the utilization area. The scope will include but not be limited to such things as conductor deterioration; conductor termination; electrical clearance and sag; pole and pole hardware general condition; transformer condition; transformer hardware and grounding condition; general electrical grounding; transformer pad and electrical duct deterioration; substation interior and fencing requirements; minimum required protective relaying; fusing and circuit breaker protection; and any other unsafe, worn out, or insufficient condition found whether governed by a code requirement or not. These items have been identified as major items of scope; however, additional deficiencies identified during studies and design efforts will be prioritized and included in this project as funding allows.

The FY 1996 appropriation will be used to initiate Title I design.

2483

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-462, Health Physics Instrument Laboratory, Idaho National Engineering Laboratory, Idaho

TEC: $14,300
TPC: $15,906

Start Date: 2nd Qtr. FY 1996 Completion Date: 1st Qtr. FY 2000

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 1,126	$ 0	$ 1,126	$ 1,056
1997	2,260	0	2,260	1,019
1998	8,180	0	8,180	6,204
1999	2,734	0	2,734	5,009
2000	0	0	0	1,012

3. Narrative:

This project provides for the design, procurement, and construction activities to provide for a new Health Physics Instrument Laboratory (HPIL) (CFA-633) at the Idaho National Engineering Laboratory (INEL). Because of the nature of business at INEL, radioactive detection services and personnel dosimeters are required to ensure a safe and healthful workplace for INEL workers. This project will provide a new facility for the servicing of radiation detection instruments, irradiation of dosimeters, and the testing of equipment used in radioactive environments. The purpose of HPIL is to provide, repair, and maintain radiation detection instruments; evaluate newly developed sensor equipment; and research and develop new methods of radiation detection. The project will also support needs for irradiating calibration, quality control, and quality assurance dosimeters.

This facility provides laboratories for neutron, gamma, alpha, and beta calibration and irradiation of instrumentation. A low energy x-ray system will provide for low energy photon characterization and irradiation. The primary sources that will be used for the isotopic calibrations are cesium-137, plutonium-239, californium-252, and cobalt-60. Several other low activity isotopes will be used for general characterization of the instruments.

This facility will respond to site users' requirements by providing for quick response for calibration, irradiation, and turnaround of dosimeters and radiological instrumentation.

The assumptions used to develop project scope, schedule, and cost are:

a. The new HPIL facility will be required to meet American National Standards Institute (ANSI) N323 guidelines as specified by DOE Order 5480.11, "Radiation Protection for Occupational Workers."
b. The new facility is based on code requirements for safe handling of radioactive sources, operations associated with equipment testing and calibration, functional layout of the building, and shielding requirements for each radioactive source and surrounding areas.
c. The cost estimate is based on preliminary building layouts and construction techniques associated with radioactive shielding as developed by the operating program.
d. The construction schedule is consistent with historical construction at INEL.

The FY 1996 appropriation will be used to initiate Title I design.

2484

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-463, Central Facilities Area (CFA) Craft Shop, Idaho National Engineering Laboratory, Idaho

TEC: $10,700
TPC: $12,511

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 724	$ 0	$ 724	$ 475
1997	6,815	0	6,815	2,924
1998	3,161	0	3,161	6,272
1999	0	0	0	1,029

3. Narrative:

This project includes the design, procurement, and construction activities to provide a new craft shop in the Central Facilities Area (CFA) at the Idaho National Engineering Laboratory (INEL). The craft shop will be approximately 38,000 square feet and will consist of shop/work areas for asbestos workers, laborer craft personnel, locksmiths, load testing of lifting devices, plant utility operators, electricians, instrument technicians, and custodians. The craft shop will also include areas for material and equipment storage, conference areas, lunch rooms, lockers, showers, and restrooms. Office areas will be provided for managers, foremen, administrative personnel, technical support personnel, and CFA shift supervisor.

In addition to the new craft shop, modifications will be made to the existing CFA-621, CFA-622, CFA-623, and CFA-624 buildings to further consolidate operations of welders, carpenters, painters, sheet metal workers, machinists, pipefitters, insulators, and the tool crib. A separate covered storage area will also be provided.

The FY 1996 appropriation will be used to initiate Title I design.

2485

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-464, Electrical and Utility Systems Upgrade, Idaho Chemical Processing Plant, Idaho National Engineering Laboratory, Idaho

TEC: $75,000
TPC: $92,800

Start Date: 2nd Qtr. FY 1996 Completion Date: 1st Qtr. FY 2002

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 4,952	$ 0	$ 4,952	$ 3,850
1997	14,000	0	14,000	9,700
1998	22,000	0	22,000	18,100
1999	16,000	0	16,000	13,800
2000	15,000	0	15,000	12,900
2001	3,048	0	3,048	12,900
2002	0	0	0	3,750

3. Narrative:

The Electrical and Utility Systems Upgrade (EUSU) project will upgrade the Idaho Chemical Processing Plant's (ICPP) utility systems by correcting high risk environmental, health, and life safety deficiencies. Correction of these deficiencies will reduce health and safety risks and provide safe and reliable utilities to support the ICPP mission. The ICPP electrical and utility supply and distribution systems provide the infrastructure necessary to support plant operations. These systems are outdated, overloaded, and not in compliance with State regulations, DOE Orders, or national codes and standards. These factors, combined with plant-wide growth, have utilized the capacity of the distribution systems and increased the potential health and safety risks associated with long-term use and maintenance of these ICPP utility systems.

The scope of this project includes upgrades to normal and standby power electrical systems, sanitary sewer systems, and water systems. The system upgrades, improvements, and corrections, listed in order of priority, include:

a. installation of a new 13.8 KVA high-voltage electrical ductbank and manhole system (approximately 17,000 linear feet) to correct high-low voltage separation code compliance and safety problems;
b. upgrading, relocating, or new installation of approximately 10 13.8 KVA substations and approximately 10 load centers to eliminate overloaded conditions on existing electrical distribution equipment;
c. upgrading the existing standby power network and control system and installation of two-to-four new 1750 KVA (nominal) diesel generators to provide reliable standby power during commercial power outages to equipment that provides for containment and control of radioactive and fissile materials, environmental monitoring, security functions, or personnel and property protection;
d. replacement of approximately 200 20-to-40 year old panelboards and associated switchgear in 20-to-25 existing buildings that presently present a significant fire hazard;
e. reconfiguration of electrical service equipment in approximately four-to-eight existing buildings to eliminate multiple electric service entrances that violate code and constitute fire response safety hazards;
f. installation of approximately 4,000 feet of new sanitary sewer line and removal of approximately 8-to-10 remaining septic systems in order to comply with State of Idaho environmental requirements; and
g. installation of approximately 300 feet of new potable water line and several dozen water meters to correct water system deficiencies that are not in compliance with State of Idaho requirements.

The FY 1996 appropriation will be used to initiate Title I design.

2486

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-465, 200 Area Sanitary Sewer System, Richland, Washington

TEC: $33,400
TPC: $34,400

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 2000

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1996	$ 1,800	$ 0	$ 1,800	$ 1,080
1997	4,000	0	4,000	1,180
1998	14,200	0	14,200	16,970
1999	13,400	0	13,400	13,140
2000	0	0	0	1,030

3. Narrative:

This project will construct a new sanitary sewer collection, treatment, and disposal system for facilities in the 200 East and West Areas and the adjacent 600 Area in support of multiple waste management and environmental mission assignments in the 200 Area. The project is needed to avoid ground water contamination. This new system will be designed for a minimum 30-year life and will include a common gravity collection system for each area that will discharge to centralized plastic-membrane-lined evaporated lagoons for treatment and disposal. The collection systems will include approximately 100,000 feet of sewer line and approximately 15 individual lift stations. The evaporative lagoons will involve approximately 100 acres of shallow lined ponds with access roads for maintenance and fencing to keep out larger animals. All new systems will meet Washington State requirements and applicable Federal standards for sanitary waste water facilities. The portion of the existing sanitary systems replaced by the new system will be abandoned-in-place and decommissioned in compliance with State and local requirements. Any existing individual sanitary system not proposed to be abandoned or connected to the centralized system will be upgraded/permitted as necessary to meet regulatory requirements.

The FY 1996 appropriation will be used for initiation of detailed design and project management support.

2487

IV. B. Construction Funded Project Descriptive Summary

ADS: SR-1025-L1

1. Project Title and Location: Project 96-D-470, Environmental Monitoring Laboratory, Savannah River Site, Aiken, South Carolina

TEC: $ 33,000
TPC: $ 36,000

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1999

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 3,500	$ 0	$ 3,500	$ 2,360
1997	2,000	0	2,000	2,450
1998	11,000	0	11,000	6,340
1999	15,500	0	15,500	20,620
2000	1,000	0	1,000	1,230

3. Narrative:

This project will design, build, and equip a new Environmental Monitoring Laboratory (EML) and support facilities at the Savannah River Site. The new facility will provide continued full compliance with environmental protection requirements as detailed in federal and state regulations and Department of Energy (DOE) orders. The EML will house the equipment and personnel to support the site environmental sampling, radioanalytical counting, water quality/groundwater assessments, and environmental radiochemistry. The new laboratory and support facilities will include laboratory modules, mechanical and electrical support services, storage space, and offices for technical and administrative personnel. The design of the laboratory will accommodate future growth by providing expansion capability for additional laboratory modules and associated support features.

FY 1996 funds will be used to initiate design.

2488

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-D-471, CFC HVAC/Chiller Retrofit, Savannah River Site, Aiken, South Carolina

TEC: 45,000 a/ c/
TPC: 58,500 a/ c/

Start Date: 1st Qtr. FY 1996 Completion Date: Various

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 1,500	$ 0	$ 1,500	$ 1,500
1997	10,000 b/	0	10,000	8,000
1998	10,000 b/	0	10,000	9,000
1999	10,000 b/	0	10,000	10,000
2000	10,000 b/	0	10,000	10,000
2001	3,500 b/	0	3,500	6,500

3. Narrative:

This project provides for the elimination of the use of ozone depleting Chlorofluorocarbons (CFCs) in site refrigeration systems to ensure compliance with the Environmental Protection Agency (EPA) stratospheric ozone protection amendment of the Clean Air Act through facility modifications, equipment replacements, equipment retrofits, etc., required for Nuclear Materials and Facilities Stabilization activities at Savannah River Site, Aiken, SC. The identified fiscal year subprojects represent the highest mission and/or regulatory priority activities at the time of budget formulation. In general, the estimated funding for each location and listed subproject is based on field inspection data and parametric cost studies. The studies are preliminary in nature and are indicative of the size of the subproject and the relative magnitude of the associated requirements. It should be noted also that the continuing study of requirements will result in changes in scope and the relative priority of some of the subprojects. Other subprojects may be substituted with the necessary postponement of some of those identified, dependent upon conditions or situations not now apparent, but principally limited to those conditions stemming from catastrophic equipment failures and environmental compliance requirements.

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a/ This is a planning estimate only. This estimate is based on a parametric extrapolation of preliminary data, as well as data from other sources. This program has been developed as a finite life capital program with a definitive mission driven by the regulatory requirements to phase out the usage of CFCs at the Savannah River Site. The Department has undertaken a complete baselining of all CFC dependent systems through the Condition Assessment Survey (CAS) element of Capital Asset Management Process (CAMP). This survey is incomplete and, therefore, the total cost of the program is uncertain. However, the environmental and regulatory urgency of this issue has necessitated the inclusion of this program in the FY 1996 budget in advance of this data.

b/ Under development; preliminary funding level for planning purposes only; to be based upon CFC usage reductions outlined in site specific Refrigerant Reduction Plans.

c/ Does not reflect the reprogramming of an FY 1994 initiated 789-A Emergency Action of $11,200,000 originally funded as a Major Item of Equipment.

2489

IV. B. Construction Funded Project Descriptive Summary

ADS: SR-0422-L1

1. Project Title and Location: Project 96-D-472, Plant Engineering and Design, Savannah River Site, Aiken, South Carolina

TEC: $4,000
TPC: $4,000

Start Date: 1st Qtr. FY 1996 Completion Date: N/A

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 4,000	$ 0	$ 4,000	$ 3,000
1997	0	0	0	1,000

3. Narrative:

This project provides for Architectural/Engineer services (Title I and Title II) on Nuclear Materials and Facilities Stabilization construction projects at the Savannah River Site which are under consideration for authorization request in future years. This will allow certain designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II) prior to formal Congressional authorization. The design effort accomplished under this project will be sufficient to assure project feasibility, define the scope, provide detailed estimates of the cost of construction based on the approved design and working drawings and specifications, and provide construction schedules including procurements. The design effort will generally be extensive enough so that construction can physically start or contracts be let for long lead procurement items in the budget fiscal year in which Congressional authorization is received.

2490

IV. B. Construction Funded Project Descriptive Summary

ADS: SR-1021-L1

1. Project Title and Location: Project 96-D-473, Health Physics Site Support Facility, Savannah River Site, Aiken, South Carolina

TEC: $27,800
TPC: $31,500

Start Date: 2nd Qtr. FY 1996 Completion Date: 3rd Qtr. FY 2000

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1996	$ 2,000	$ 0	$ 2,000	$ 1,800
1997	5,000	0	5,000	1,600
1998	6,000	0	6,000	5,200
1999	9,000	0	9,000	10,000
2000	5,800	0	5,800	9,200

3. Narrative:

This project will design, build, and equip a new Health Physics Site Support Facility at the Savannah River Site. The new facility will provide for full compliance with radiation protection requirements of the Department of Energy (DOE) Orders. Health Protection Technology laboratory and processing facilities determine, evaluate, and document personnel exposures to radioactive materials. The new laboratory facilities will include laboratory modules for sample receipt, sample preparation, counting for radioactivity, data evaluation, mechanical and electrical support services, storage space, and offices for technical and administrative personnel. The design of the laboratory will accommodate future growth by providing expansion capability for additional laboratory modules and associated support features. The project includes site preparation, erosion control, facility construction, utilities, furnishings and equipment, final site grading, paving of parking areas, roadways, sidewalks, and landscaping.

This project will provide a facility that will be an essential part of safe operation of the site, and which will allow the site to be in full compliance with DOE Order 5480.11 (Radiological Protection for Occupational Workers) and DOE Radiological Control Manual DOE/EH-0256T. Existing facility renovation or expansion is not practical nor cost effective. Renovation would be ineffective since the existing facilities do not contain sufficient space required to perform the types and quantity of analyses required. Facility expansion is not practical since appropriate space adjacent to the current facility is not available.

FY 1996 funding will be used to initiate design.

2491

1. Title and Location of Project: 324 Facility Compliance/Renovation, Richland, Washington

2a. Project No.: 95-D-454 ADS# RL-6680-11
2b. Construction Funded

SIGNIFICANT CHANGES

- This project will provide for the upgrading and modification of portions of the 324 Building (Waste Technology Engineering Laboratory). The original total estimated cost of $6,000,000 was reduced to $5,800,000 due to the revision of General and Administration (G&A) rates applied to capital projects by the contractor.

2492

B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-454, 324 Facility Compliance/Renovation, Richland, Washington

TEC: $5,800 b/
TPC: $6,400

Start Date: 2nd Qtr. FY 1995 Completion Date: 4th Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 1,500	$ 0	$ 1,500 a/	$ 1,200
1996	3,500	0	3,500	2,900
1997	800 b/	0	800	1,700

3. Narrative:

This project will provide for the upgrading and modification of portions of the 324 Building (Waste Technology Engineering Laboratory) which is located in the 300 Area of the Hanford Site. The work will encompass certain aspects of the building and will involve modifications to piping, electrical, and fire sprinkler systems.

The scope of this project consists of specific corrective actions that will address the following items:

- o Provide an upgrade of the electrical switchgear.
- o Upgrade the fire sprinkler system as needed to meet the requirements of the National Fire Protection Agency (NFPA) Code 13. Some elements of work to be covered by this item include:
  - (a) Provide fire department standpipe connections.
  - (b) Provide adequate seismic bracing of sprinkler piping.
  - (c) Add sprinkler heads in some areas to provide adequate coverage.
  - (d) Install backflow preventers to isolate the fire sprinkler system from the potable water system.
- o Remove acid/caustic system.
- o Upgrade existing switchgear and motor control center.
- o Upgrade evaporative cooling system with refrigerated system.

The FY 1996 appropriation will be used to complete the definitive design and initiate construction.

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a/ For definitive design and procurement.
b/ Reduction due to revision of General and Administration (G&A) cost rates applied to capital projects by ICF-KH. Based on this revision, the Total Estimated Cost was changed from $1,000,000 to $800,000.

2493

1. Title and Location of Project: Security Facilities Consolidation, Idaho Chemical Processing Plant, Idaho National Engineering Laboratory, Idaho g/	2a. Project No.: 95-D-456 2b. Construction Funded

SIGNIFICANT CHANGES

o The title of this project has been revised to reflect the cost benefit contained in the scope of work. The current security system will not be expanded.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-D-456, Security Facilities Consolidation, Idaho Chemical Processing Plant, Idaho National Engineering Laboratory, Idaho a/

TEC: $18,500
TPC: $22,732

Start Date: 2nd Qtr. FY 1995 Completion Date: 2nd Qtr. FY 1999

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 986	$ 0	$ 986	$ 896
1996	8,382 b/	0	8,382	7,631
1997	8,131	0	8,131	8,096
1998	618	0	618	1,554
1999	383	0	383	323

3. Narrative:

This project will construct new facilities and install new equipment to support the ICPP security organization by resolving DOE Order compliance deficiencies, and Inspection and Evaluation findings. The project will also accommodate changes to the ICPP mission, decrease plant operating costs, and support environmental remediation projects.

The FY 1996 appropriation will be used to initiate construction of the 651 Protected Area Task and to complete Title I design activities for the 749 Protected Area Task.

2495

a/ The title of this project has been revised. The current security system will not be expanded.
b/ A baseline change proposal will be evaluated for reduction of project related indirect funding costs as a result of contract consolidation at the INEL.

1. Title and Location of Project: Upgrade Site Road Infrastructure, Savannah River Site, Aiken, South Carolina	2a. Project No. 95-D-155 2b. Construction Funded	ADS:SR-1017-LT

SIGNIFICANT CHANGES

- The original scope of this line item was to replace only the primary road bridges 603-2G and 603-3G. Recent inspection of Savannah River Site (SRS) bridges have identified 603-1G and 603-67G to be in need of immediate replacement. The addition of these two bridges to the scope increased the total estimated cost from $4,900,000 to $10,500,000. Total project cost has increased from $5,635,000 to $11,370,000. The construction end date was extended from 3rd Qtr. to 4th Qtr. FY 1998.

- Transferred to Environmental Management from Defense Programs in FY 1996.

IV. B. Construction Funded Project Descriptive Summary

ADS: SR-1017-L1

1. Project Title and Location: Project 95-D-155, Upgrade Site Road Infrastructure, Savannah River Site, Aiken, South Carolina a/

TEC: $10,500
TPC: $11,370

Start Date: 2nd Qtr. FY 1995 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1995	$ 750	$ 0	$ 750	$ 700
1996	2,900	0	2,900	2,300
1997	4,450	0	4,450	3,800
1998	2,400	0	2,400	3,700

3. Narrative:

The original scope of this line item was to replace only the primary road bridges 603-2G and 603-3G. Recent inspection of Savannah River Site (SRS) bridges have identified 603-1G and 603-67G to be in need of immediate replacement. The addition of these two bridges to the scope increased the total estimated cost from $4,900,000 to $10,500,000. Total project cost has increased from $5,635,000 to $11,370,000. The construction end date was extended from 3rd Qtr. to 4th Qtr. FY 1998.

The Upgrade Site Road Infrastructure project provides for replacement of four bridges. The bridge replacement includes the 2-lane bridge on Road F, two 4-lane bridges on Road C, and the clover leaf bridge at Road 2 and Road C. One of the Road C bridges and the Road F bridge are currently on wooden pile foundations and will be replaced with concrete structures.

FY 1996 funds will be used to complete Title I and II design work and start construction.

2497

a/ Transferred to Environmental Management from Defense Programs in FY 1996.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

NUCLEAR MATERIALS AND FACILITIES STABILIZATION
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Radio Trunking System, Savannah River Site, Aiken, South Carolina	2a. Project No. 95-D-156 2b. Construction Funded	ADS:SR-1016-LT

SIGNIFICANT CHANGES

- Transferred to Environmental Management from Defense Programs in FY 1996.

IV. B. Construction Funded Project Descriptive Summary

ADS: SR-1016-L1

1. Project Title and Location: Project 95-D-156, Radio Trunking System, Savannah River Site, Aiken, South Carolina a/

TEC: $19,400
TPC: $22,400

Start Date: 2nd Qtr. FY 1995 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1995	$ 2,100	$ 0	$ 2,100	$ 1,300
1996	6,000	0	6,000	5,100
1997	7,000	0	7,000	7,000
1998	4,300	0	4,300	6,000

3. Narrative:

The trunked radio system incorporates the use of a computer controlled radio system that automatically assigns radio channels. This frequency assignment is transparent to the radio user. The system software allows dynamic reconfiguration of communications resources to meet operations requirements or temporary short term emergency needs. The project will provide a new tower site or sites complete with a small equipment shelter, backup power, and a trunked radio repeater system. Portions of the existing radio systems will continue to be operational in conjunction with the trunked radio system. Most conventional plant radios will be replaced with the trunked radios and transferred to the trunked radio system. It is anticipated that the site security and emergency systems will be converted to trunked capability first.

This project, under the recent privatization initiative of the Secretary of Energy, is under re-evaluation. The procurement strategy may be modified to allow for one "turnkey" contract for the entire project.

FY 1996 funds will be used to complete Title II design and initiate construction.

a/ Transferred to Environmental Management from Defense Programs in FY 1996.

1. Title and Location of Project: D-Area Powerhouse Life Extension, Savannah River Site, Aiken, South Carolina	2a. Project No. 95-D-157 2b. Construction Funded	ADS:SR-1014-LT

SIGNIFICANT CHANGES

- Transferred to Environmental Management from Defense Programs in FY 1996.
- Start of Title I Design changed to 1st Quarter FY 1996 and Start of Construction changed to 1st Quarter FY 1997 to accommodate re-evaluation of the project in response to President and Secretary of Energy initiatives of contract reform, privatization, and cost reduction.

IV. B. Construction Funded Project Descriptive Summary

ADS: SR-1014-L1

1. Project Title and Location: Project 95-D-157, D-Area Powerhouse Life Extension, Savannah River Site, Aiken, South Carolina a/

TEC: $ 71,500
TPC: $ 91,800

Start Date: 1st Qtr. FY 1996 Completion Date: 4th Qtr. FY 2001

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1995	$ 4,000	$ 0	$ 4,000	$ 0
1996	0	0	0	3,400
1997	16,000	0	16,000	12,600
1998	22,500	0	22,500	19,200
1999	11,300	0	11,300	14,100
2000	11,000	0	11,000	12,400
2001	6,700	0	6,700	9,800

3. Narrative:

This project will refurbish the existing 40 year old D-Area Powerhouse to extend facility life. Refurbishment of basic plant systems is required to assure a continued and reliable supply of steam to support site mission needs and to improve the efficiency of plant operations. The major scope items of the project include replacement of boiler generator bank tubing and selected waterwall tubing, refurbishment of medium and low voltage switchgear, replacement of motor control centers, replacement of pneumatic controls with a microprocessor based control system, replacement of power and instrument cables, and refurbishment of the electrostatic precipitators.

Internal fire protection will also be upgraded with sprinklers and inside distribution, fire alarm and detection systems, and passive protection.

FY 1996 funding will not be requested while Department of Energy-Savannah River (DOE-SR) implements the President and Secretary of Energy initiatives of contract reform, privatization, and cost reduction. DOE-SR is conducting a re-evaluation of privatizing the operation and maintenance of the powerhouse based on contract reform initiatives. An independent Life Cycle Cost Analysis is scheduled for completion in January 1995 along with additional data that will assist DOE-SR in making a determination regarding privatization. In addition, DOE-SR has initiated a review of the steam supply load and availability to meet safety requirements, project management techniques, implementation strategy, and operating requirements that are anticipated to significantly compress schedule and reduce costs. Review and final determination is expected by March 1995. If the decision is made to continue with the project in lieu of privatization, indications are that the current schedule completion date can be maintained even with the reduction of funding in FY 1996.

2501

a/ Transferred to Environmental Management from Defense Programs in FY 1996.

1. Title and Location of Project: Underground Storage Tanks, Rocky Flats Plant, Golden, Colorado	2a. Project No.: 94-D-122 2b. Construction Funded	ADS# RF-6748

SIGNIFICANT CHANGES

o The evaluation is currently underway to re-evaluate the safety categories of the fuel tanks supporting nonvital safety system generators. Tanks being replaced will meet the "24 hour" supply size requirements.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-122, Underground Storage Tanks, Rocky Flats Plant, Golden, Colorado

TEC: $12,500
TPC: $15,393

Start Date: 3rd Qtr. FY 1994 Completion Date: 4th Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 700	$ 0	$ 700	$ 51
1995	2,500	0	2,500	2,649
1996	5,000	0	5,000	3,600
1997	4,300	0	4,300	3,000
1998	0	0	0	3,200

3. Narrative:

The Underground Storage Tanks project will provide for the removal and replacement and/or upgrade of 22 underground storage tanks located at the Rocky Flats Plant, Golden, Colorado. These tanks are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA).

The purpose of this project is to replace and/or upgrade 22 underground storage tanks to comply with RCRA regulations ~~which~~ that require ~~that~~ underground storage tank owners to implement a regular integrity testing program and replace or upgrade tanks to more stringent requirements to eliminate environmental releases due to tank corrosion or fuel transfer practices. The project is designed to ensure regulatory compliance while minimizing the day-to-day maintenance and management requirements. The majority of the tanks contain fuel for emergency electric generators for essential plant processes. Other tanks contain fuel for plant support vehicles. Replacement and/or upgrade of these systems is to meet the new regulations ~~which~~ that require, in part, ~~that~~ each underground storage tank to be provided with corrosion protection, overfill and spill prevention, and leak detection.

The FY 1996 appropriation will be used to complete Title II design for 22 underground storage tanks, Title III design will be in progress, and begin construction for replacement of seven underground storage tanks.

2503

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes to the FY 1995 Congressional Budget Request are denoted by a vertical line in the left margin.)

DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Nuclear Materials and Facilities Stabilization

1. Title and Location of Project: Emergency Response Facility, Idaho National Engineering Laboratory, Idaho

2a. Project No.: 94-D-401
2b. Construction Funded

ADS# ID-6317-6

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

ADS# ID-6317-6

1. Project Title and Location: Project 94-D-401, Emergency Response Facility, Idaho National Engineering Laboratory, Idaho

TEC: $13,500
TPC: $14,526

Start Date: 2nd Qtr. FY 1994 Completion Date: 2nd Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 1,190	$ (600) a/	$ 590	$ 352
1995	5,219	0	5,219	1,438
1996	5,074 b/	0	5,074	7,839
1997	2,617	0	2,617	2,663
1998	0	0	0	1,208

a/ Adjustment reflects the Conference Mark ($590,000) and the general reduction ($10,000).
b/ A baseline change proposal will be evaluated for reduction of project related indirect funding as a result of contract consolidation at the INEL.

3. Narrative:

This project provides for the design, procurement, and construction of a new fire station and fire fighter training facility at the Central Facilities Area (CFA) and a new fire station at the Experimental Breeder Reactor Area located at the Argonne National Laboratory - West (ANL-W) of the Idaho National Engineering Laboratory. The new fire station at CFA will consist of administrative offices, a secure emergency notification and dispatch center, equipment maintenance areas, equipment storage, dormitory and ready room facilities, and response vehicle bays. The new fire fighter training facility will include a state-of-the-art computer controlled fire simulation facility and several outdoor fire training areas. The new station and training facility will be located adjacent to the CFA to enhance response time for emergency vehicles to the Idaho Chemical Processing Plant and Test Reactor Area. The new fire station at ANL-W will consist of administrative offices, equipment maintenance areas, equipment storage, dormitory and ready room facilities, and response vehicle bays.

The FY 1996 appropriation will be used to continue construction of the CFA Fire Station, complete title design activities and initiate construction of the CFA Fire Training Facility, and initiate title design activities for ANL-W Fire Station.

2505

1. Title and Location of Project: 300 Area Process Sewer Piping System Upgrade, Richland, Washington	2a. Project No.: 94-D-412 2b. Construction Funded	ADS# RL-6680-4

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-412, 300 Area Process Sewer Piping System Upgrade, Richland, Washington

TEC: $ 9,900
TPC: $11,700 a/

Start Date: 2nd Qtr. FY 1994 Completion Date: 1st Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 1,100	$ 0	$ 1,100	$ 409
1995	7,800	0	7,800	5,331
1996	1,000	0	1,000	4,090
1997	0	0	0	70

3. Narrative:

This project will provide a new pressurized process sewer piping system in compliance with TPA milestones AM-17-06J & K in order to prevent future ground-water contamination and support all programs in the 300 Area. Some of the piping will be removed for construction of lift stations, the remaining piping will be dispositioned as part of the 300 Area Remedial Investigation/Study Work Plans. The new collection system will start about 5 feet from each building and will terminate at a new, common collection sump, which is being provided by the 300 Area Treated Effluent Disposal Facility project, on the north end of the 300 Area. The project will provide high-integrity process sewer piping to ensure that the process water flow reaches the treatment facility and to preclude leakage to the soil column and contamination of the water table. A completed engineering study showed that the pressurized system was the preferred alternative based on life cycle cost analysis and technical factors.

The ~~fiscal year~~ FY ~~1995~~ 1996 appropriation will be used to ~~proceed with engineering and inspection and start construction~~ complete construction and prepare a readiness review for the new 300 Area process sewer collection.

2507

a/ The total project cost changed because of other project costs in fiscal years 1994, 1995, and 1996 to fund environmental permitting requirements, cultural resource review, monitoring needs, health physics technician support, quality assurance, safety, and the advance conceptual design support incorporating the vacuum technology concept.

1. Title and Location of Project:	Idaho National Engineering Laboratory Medical Facilities, Idaho National Engineering Laboratory, Idaho	2a. Project No.: 94-D-415 2b. Construction Funded	ADS# ID-6317-7

SIGNIFICANT CHANGES

o No significant changes.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-415, Idaho National Engineering Laboratory Medical Facilities, Idaho National Engineering Laboratory, Idaho

TEC: $ 9,700
TPC: $10,600

Start Date: 2nd Qtr. FY 1994 Completion Da[illegible] FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1994	$ 1,110	$ (510) a/	$ 600	$ 262
1995	4,920	0	4,920	1,029
1996	3,601 b/	0	3,601	6,991
1997	579	0	579	837
1998	0	0	0	581

a/ Adjustment reflects FY 1994 general reduction.
b/ A baseline change proposal will be evaluated for reduction of project related indirect funding as a result of contract consolidation at the INEL.

3. Narrative:

This project provides for the design, procurement, and construction to provide for a new Central Facility Area Medical Facility, as well as upgrades to the existing dispensaries at the Test Area North and the Test Reactor (TRA) located at the Idaho National Engineering Laboratory. These facilities will support nearly 19,000 worker/patient visit[illegible] a year, including 3,463 physical examinations and follow on health surveys of the workforce. The examinations and surveys follow the heal[illegible] individuals who have been exposed to specific hazards. Current facilities were built over 40 years ago and no longer can accom[illegible] volume of work required to ensure worker health and safety.

The FY 1996 appropriation will be used to complete Titl[illegible] [illegible]ies for TRA/TAN Medical Facilities and continue construction of the Central Facilities Area (CFA) Medical Facility.

2509

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Nuclear Materials and Facilities Stabilization

1. Title and Location of Project: Infrastructure Replacement, Rocky Flats Plant, Golden, Colorado g/	2a. Project No.: 94-D-451 2b. Construction Funded	ADS# RF-6751

SIGNIFICANT CHANGES

o At the Rocky Flats Plant, the site infrastructure replacement needs have been redirected to focus on the current Nuclear Materials and Facilities Stabilization mission. Presently each subproject is being reevaluated to establish a new baseline with this mission.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-D-451, Infrastructure Replacement, Rocky Flats Plant, Golden, Colorado a/ TEC: $56,353 b/ TPC: $58,714 b/

Start Date: 2nd Qtr. FY 1988 Completion Date: 4th Qtr. FY 2002

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
Prior Years	$ 35,523	$ (11,620)	$ 23,903	$ 15,251
1993	11,080	(11,080) c/	0	5,366
1994	6,600	0	6,600	3,863
1995	10,600	0	10,600	5,786
1996	2,940	0	2,940	3,700
1997	2,450	0	2,450	3,229
1998	0	0	0	9,298
1999	0	0	0	0
2000	0	0	0	0
2001	9,860	0	9,860	5,000
2002	0	0	0	4,860

3. Narrative:

As a result of transfer of landlord and Program Secretarial Office responsibility at the Rocky Flats Plant (RF) from Defense Programs (DP) to Environmental Management (EM) and the subsequent transfer for management responsibility for capital projects, this project was established in FY 1994 for the four subprojects at RF that were originally part of DP project 88-D-122, Facilities Capability Assurance Program, Various Locations, that transferred to EM. The revised total estimated cost for this project is ~~$77,960,000~~ 56,353,000, and the revised total project cost is ~~$80,505,000~~ 58,714,000.

The purpose of the Infrastructure Replacement is to rectify problems in the aging RF buildings, utilities, and other real property. Replacement of aging utility and infrastructure systems is necessary to ensure that all necessary systems are operable and reliable throughout transition and decontamination and decommissioning activities. Replacement of the components and/or systems will help ensure worker safety and health as well as provide additional protection to the surrounding areas.

The FY 1996 appropriation will be used to complete construction of Building 881 transformer replacement, continue substation construction, and initiate construction of overhead distribution system for subproject 88-01.

2511

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a/ This project was established in FY 1994 from transferring subprojects from Defense Programs, project 88-D-122, Facilities Capabilities Assurance Program, Various Locations.

b/ The reduction in TEC and TPC resulted from the reduction in scope of the 13.8 VA overhead distribution project and electrical rehabilitation project.

c/ Adjustment reflects Defense Programs FY 1993 general reduction.

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NUCLEAR MATERIALS AND FACILITIES STABILIZATION
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Domestic Water System Upgrade, Phase I and II, Savannah River Site, Aiken, South Carolina	2a. Project No. 93-D-147 2b. Construction Funded	ADS:SR-1011-L1

SIGNIFICANT CHANGES

- Transferred to Environmental Management from Defense Programs in FY 1996.
- The scope was revised to consolidate the site's domestic water systems in lieu of upgrading each individual area. As a result of this change, the AE duration changed from 38 to 41 months and the total project cost decreased from $45,575,000 to $42,185,000.

2512

IV. B. Construction Funded Project Descriptive Summary ADS: SR-1011-L1

1. Project Title and Location: Project 93-D-147, Domestic Water System Upgrade, Phase I and II, Savannah River Site, Aiken, South Carolina a/ TEC: $33,590 TPC: $42,185

Start Date: 2nd Qtr. FY 1993 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1993	$ 1,000	$ 0	$ 595	$ 360
1994	7,720	0	8,125	403
1995	11,300	0	11,300	6,177
1996	7,130	0	7,130	17,780
1997	6,440	0	6,440	8,870

3. Narrative:

The scope was revised to consolidate the site's domestic water systems in lieu of upgrading each individual area. As a result of this change, the AE duration changed from 38 to 41 months and the TPC decreased from $45,575,000 to $42,185,000.

The Savannah River Site has twenty-eight domestic water systems which include treatment, distribution, and well facilities for supplying the site with a safe, reliable drinking water supply. The site's seventeen small domestic water systems (serving less than 25 people per the South Carolina Department of Health and Environmental Control (SCDHEC) definition) will be left as is since they meet SCDHEC Primary Maximum Contaminant Limits (MCLs). The remaining eleven large systems (serving 25 or more people) will be consolidated into three major systems.

This project now includes the following scope:

- A new well water treatment plant.
- Looped underground transmission piping.
- Underground transmission piping tie line.
- Underground intra-area looped distribution piping.
- New elevated water storage tanks. A new tank currently being installed in A-Area will connect to and function as part of the new consolidated loop.
- Upgrades to the existing water treatment plant to serve as a backup to the new water treatment plant.

FY 1996 funding will be used to complete construction of the intra-area looped distribution systems, complete definitive design, and initiate construction of remaining items.

a/ Transferred to Environmental Management from Defense Programs in FY 1996.

2513

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Nuclear Materials and Facilities Stabilization

1. Title and Location of Project:	Idaho National Engineering Laboratory Electrical Upgrade, Idaho National Engineering Laboratory, Idaho	2a. Project No.: 93-D-172 2b. Construction Funded	ADS# ID-6317-3

SIGNIFICANT CHANGES

o The reduction in Total Estimated Cost ($17,000 to $15,944) and Total Project Cost ($18,250 to $16,917) is due to a mission change at the Naval Reactor Facility and procurement costs which came in lower than estimated.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-172, Idaho National Engineering Laboratory Electrical Upgrade, Idaho National Engineering Laboratory, Idaho

TEC: $15,944 c/
TPC: $16,917 a/

Start Date: 2nd Qtr. FY 1993 Completion Date: 1st Qtr. FY 1997

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993	$ 1,000	$ 0	$ 1,000	$ 655
1994	9,600	(1,580) b/	8,020	1,550
1995	7,800	(1,000) c/	6,800	13,351
1996	124	0	124	388

a/ A baseline change proposal will be evaluated for reduction of project related indirect funding as a result of contract consolidation at the INEL.
b/ Adjustment reflects FY 1994 general reduction.
c/ Reflects procurement reduction of $623,000 and uncosted reduction of $377,000.

3. Narrative:

This project provides for the planning, management, design, procurement, and construction activities to upgrade key portions of the high voltage power system which supplies electrical power to all of the Idaho National Engineering Laboratory. Due to the age of the structures and equipment, it is expected that chances of failures will increase unless this project is completed on schedule. Repairs to current system are time consuming and costly due to obsolescence and unavailability of spare parts.

The ~~fiscal year 1995~~ FY 1996 appropriation ~~funding~~ will be used to ~~initiate design and long lead procurement~~ continue construction activities.

2515

1. Title and Location of Project: 200 Area Unsecured Core Area
Fabrication Shop, Richland, Washington

2a. Project No.: 93-D-186 ADS# RL-6680-1
2b. Construction Funded

SIGNIFICANT CHANGES

This project has been canceled due to mission changes. All funding for this project was used as part of the FY 1995 Uncosted Balance Reduction. Productivity savings can be realized due to a general drawdown of the Hanford Site's activities and population. Actions will be taken to update existing facilities and to develop alternative work plans as needed to meet requirements.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-D-186, 200 Area Unsecured Core Area Fabrication Shop, Richland, Washington

TEC: $ 0 a/
TPC: $320 a/

Start Date: N/A Completion Date: N/A

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1993 b/	$ 1,000	$ 0	$ 1,000	$ 0
1994	0	(1,000)a/	0	0
1995	4,000	(4,000)a/	0	0
1996	0	0	0	0

3. Narrative:

~~This project will provide a single 18,000 square foot multi-purpose facility for permanent installation of large fabrication equipment, including craft, lunchroom, and storage space for tools, materials, and supplies. It is required to replace condemned buildings, and buildings that should be condemned, and to support all Hanford programs.~~

~~The FY 1996 appropriation will be used for completion of (demolition) construction.~~

2517

a/ This project has been canceled due to mission changes. All funding for this project was used as part of the FY 1995 Uncosted Balance Reduction. Productivity savings can be realized due to a general drawdown of the Hanford Site's activities and population. Actions will be taken to update existing facilities and to develop alternative work plans as needed to meet requirements. Other project costs result from FY 1995 closeout and previous year costs.

b/ The FY 1993 funding was appropriated under the Assistant Secretary for Environmental Restoration, Office of Waste Management.

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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Nuclear Materials and Facilities Stabilization

1. Title and Location of Project: Plant Fire/Security Alarm System Replacement, Rocky Flats Plant, Golden, Colorado	2a. Project No.: 92-D-123 2b. Construction Funded	ADS# RF-6755

SIGNIFICANT CHANGES

o The scope, schedule, and budget expanded to support the Special Nuclear Materials (SNM) consolidation initiative.

As directed by the Department of Energy and the Rocky Flats Field Office, the ARGUS security system, developed by the Lawrence Livermore National Laboratory, will be used.

2518

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-D-123, Plant Fire/Security Alarm System Replacement, Rocky Flats Plant, Golden, Colorado TEC: $69,900 TPC: $74,774

Start Date: 4th Qtr. FY 1993 Completion Date: 3rd Qtr. FY 2000

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 5,200	$ (5,200) a/	$ 0	$ 0
1993	8,700	(3,800) a/	4,900	80
1994	0	0	0	2,334
1995	0	0	0	2,486
1996	9,560	0	9,560	9,560
1997	15,700	0	15,700	14,600
1998	15,800	0	15,800	16,900
1999	9,000	0	9,000	9,000
2000	14,940	0	14,940	14,940

a/ This project was originally funded under Defense Programs. Upon transfer of the project to Environmental Management a Memorandum of Agreement was signed allowing Defense Programs to retain the funding for FY 1992 ($5,200) and a portion of the funding for FY 1993 ($3,800). This resulted in a two year delay, causing the project to be restructured with a completion date of FY 2000.

3. Narrative:

The purpose of this project is to replace and upgrade the existing plant-wide fire and security alarm system. The current fire and security alarm system is inadequate to satisfy the more stringent requirements and codes of today and inadequate for the proper plant operations in the future. Numerous deficiencies and vulnerabilities undermine the ability of the Rocky Flats Plant management and staff to maintain security properly for special nuclear materials and classified materials, provide for mandatory fire protection, adequately ensure life safety, and responsibly protect the environment and public health. Correcting the Office of Security Evaluations and Technical Safety Audit findings is a primary concern for the Rocky Flats Plant. The deficiencies in the existing alarm system, however, require replacement of the system to completely close the issues. Engineering and maintenance personnel are applying diligent efforts to maintaining and upgrading the present system, but the age of the system components, lack of spare parts, and inability to expand the present system makes it technically and financially infeasible to fully meet the various Office of Security Evaluations and Technical Safety Audit criteria and applicable codes and standards ~~fully~~.

The FY ~~1993~~ 1996 appropriation ~~funding~~ will be used for ~~Title I and II engineering services and start of construction~~ continued construction of the first phase of the project consisting of the core system and the building upgrades.

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DEPARTMENT OF ENERGY
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DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Nuclear Materials and Facilities Stabilization

1. Title and Location of Project:	Master Safeguards and Security Agreement/ Material Surveillance Task Force Security Upgrades, Rocky Flats Plant, Golden, Colorado	2a. Project No.: 92-D-125 2b. Construction Funded	ADS# RF-6757

SIGNIFICANT CHANGES

o Funding levels reflect revised Total Estimated Cost in response to expanded scope to support the Rocky Flats Special Nuclear Materials (SNM) consolidation initiative.

2520

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-D-125, Master Safeguards and Security Agreement/ Material Surveillance Task Force Security Upgrades, Rocky Flats Plant, Golden, Colorado

TEC: $36,800
TPC: $40,320

Start Date: 1st Qtr. FY 1994 a/

Completion Date: 4th Qtr. FY 1998 a/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 3,500	$ (3,500) b/	$ 0	$ 0
1993	0	0	0	0
1994	3,900	0	3,900	763
1995	2,100	0	2,100	4,400
1996	7,000 c/	0	7,000	7,837
1997	14,400	0	14,400	14,400
1998	9,400	0	9,400	9,400

a/ Revised to be consistent with submitted DOE HQ Baseline Change Proposal (BCP) 94-106-RF-M, and approved FY 1994 Rocky Flats Plant (RFP) Work Package (WP) 74301.

b/ Adjustments reflect the funding that remained in Defense Programs (DP) after the DP and Environmental Memorandum of Agreement dated August 27, 1993. DP transferred responsibility for the project to Environmental Management in FY 1992.

c/ FY 1996 funding level reflects a revision to the scope to support the Rocky Flats Special Nuclear Materials (SNM) consolidation initiative.

IV. B. Construction Funded Project Descriptive Summary (continued)

1. Project Title and Location: Project 92-D-125, Master Safeguards and Security Agreement/ Material Surveillance Task Force Security Upgrades, Rocky Flats Plant, Golden, Colorado

TEC: $36,800 a/
TPC: $40,320

3. Narrative:

As a result of the transfer of landlord and Program Secretarial Office responsibility at the Rocky Flats Plant (RF) from Defense Programs (DP) to Environmental Management (EM), management responsibility for capital projects at RF also were transferred. This project was originally established by DP but was transferred to EM in FY 1994. ~~Due to increasing refinement of the cost estimate and further clarification of the scope, the total estimated cost for this project was reduced in FY 1994 from $23,000,000 to $17,800,000; the total project cost was reduced from $24,030,000 to $20,320,000. The start date for the project was changed from the fourth quarter of fiscal year (FY) 1992 to the first quarter of FY 1993.~~

This project will enhance the protection of Special Nuclear Materials (SNM) and other vital Department of Energy assets at RF. The project addresses vulnerabilities identified through the Master Safeguards and Security Agreement (MSSA). ~~The enhancements will be implemented in the safeguards and security systems for eight existing buildings which formerly processed and currently store SNM and on the onsite transport system trucks which carry SNM between these buildings. Enhancements will also be extended into the buffer zone that surrounds the plant site. The project includes construction of physical barriers and constraints, installation of electronic surveillance systems, modification of existing facilities, and purchase of security equipment. The project consists of nine defined tasks, each of which is crucial to the overall objective of the project.~~

This revised MSSA line-item project will increase the security and safety of SNM, vital equipment, classified matter, and government property at the Rocky Flats Plant (Golden, Colorado) in accordance with the 1987 MSSA. With the issuance of the FY 1994 MSSA Work Package and Project Management Plan (PMP) 74301, the subproject work scope of the MSSA construction line item has been significantly updated to include new subprojects of higher Safeguards and Security (S&S) programmatic priority whose scope of work is consistent with the intent of the MSSA document published in 1987. Of the 41 subprojects onthe combined priority list, current MSSA funding profiles (TEC = $36,800,000) are estimated to fund only the top 28 priority subprojects. Unfunded MSSA subprojects primarily represent projects that either require further Rocky Flats Plant mission definition or rely on technology that is not currently available on a "production" basis. The remainder of the subprojects on the combined list are currently under consideration for alternate funding.

The scope of project is currently under review to determine if additional downscoping is possible in light of transition plans for specific buildings or groups of buildings at RF and their intended ultimate use of disposition.

The FY 1996 appropriation will be used to initiate construction of the central alarm station upgrades, security system computers, procure hold-up measurement equipment, and initiate Building 371 upgrades for consolidation.

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1. Title and Location of Project:	Idaho National Engineering Laboratory Fire and Life Safety Improvements, Idaho National Engineering Laboratory, Idaho	2a. Project No.: 92-D-181 2b. Construction Funded	ADS# ID-6317-2

SIGNIFICANT CHANGES

o No significant changes.

2523

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 92-D-181, Idaho National Engineering Laboratory Fire and Life Safety Improvements, Idaho National Engineering Laboratory, Idaho

TEC: $29,000
TPC: $30,142

Start Date: 2nd Qtr. FY 1992 Completion Date: 4th Qtr. FY 1998

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1992	$ 3,000	$ 0	$ 3,000	$ 244
1993	8,000	0	8,000	1,811
1994	5,000	(1,800) a/	3,200	8,298
1995	6,000	0	6,000	6,006
1996	6,883 b/	0	6,883	5,475
1997	1,917	0	1,917	4,418
1998	0	0	0	2,748

a/ Adjustment reflects FY 1994 general reduction.
b/ A baseline change proposal will be evaluated for reduction of project related indirect funding as a result of contract consolidation at the INEL.

3. Narrative:

This project corrects site-wide multiprogram and common-use facilities deficiencies in fire protection and life safety code compliance requirements. Typical deficiencies include inadequate water supply, alarm and suppression systems, and building/structure life safety issues, such as fire walls, exits, stairways, fire separation walls, and smoke detection systems. Modifications and upgrades will be performed only on those facilities ~~which~~ that have validated long-term utility or house critical functions.

The ~~fiscal year 1995 funding~~ FY 1996 appropriation will be used for continuing construction activities.

2524

1. Title and Location of Project: Criticality Alarm and Plant Annunciation Utility Replacement, Rocky Flats Plant, Golden, Colorado	2a. Project No.: 91-D-127 2b. Construction Funded	ADS# RF-6756

SIGNIFICANT CHANGES

o $8 million in prior year funding was transferred from Defense Programs to Environmental Management as a result of the Memorandum of Agreement signed between Defense Programs and Environmental Management on August 27, 1993. Due to the change in mission at Rocky Flats, after the transfer, the project was reevaluated. During this reevaluation period, the activity on this project has been reduced but activity is now being accelerated as a result of the completion of the reevaluation. There is no change in scope for this project.

2525

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 91-D-127, Criticality Alarm and Plant Annunciation Utility Replacement, Rocky Flats Plant, Golden, Colorado

TEC: $29,500
TPC: $31,162

Start Date: 3rd Qtr. FY 1994 Completion Date: 2rd Qtr. FY 1999 a/

2. Financial schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1991	$ 6,600	$ 0	$ 6,600	$ 0
1992	0	0	0	0
1993	6,300	(4,900)b/	1,400	0
1994	0	0	0	422
1995	0	0	0	1,800
1996	2,800	0	2,800	8,500
1997	6,700	0	6,700	6,700
1998	5,900	0	5,900	6,000
1999	6,100	0	6,100	6,078

a/ Project funding was reduced in FY 1996 and FY 1997 due to lack of available funds for capital projects. $6,100,000 of the funding was extended to FY 1999 and will push project completion date out accordingly.
b/ Adjustment reflects funding remaining in Defense Programs (DP) after Defense Programs and Environmental Management's Memorandum of Agreement dated August 27, 1993, which transferred responsibility for the project to EM in FY 1992.

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3. Narrative:

~~This project will provide for the replacement of 52 Production Annunciation Utilities in 65 buildings and the segregation of Criticality Alarm Systems in 25 fissile material handling buildings at the Rocky Flats Plant. The existing systems are used to broadcast criticality alarms and relay emergency and production information to plant personnel. This project includes the replacement of all existing Production Annunciation System components and the addition of duplicate systems in fissile material handling buildings for amplifying and broadcasting criticality alarms. In addition, the phone lines that tie each of the building systems to the Central Dispatch Office will be replaced by a fiber optics network.~~

The Plant ~~Production~~ Annunciation Utility is the primary means of informing plant personnel when immediate announcements are required concerning production, security, radiation contamination, weather, or emergency situations such as fire or terrorist actions. The existing Plant ~~Production~~ Annunciation Utility is worn, failing, and inadequate to meet current production requirements and industry standards. The utility is also used to satisfy Department of Energy Order 5480.5 ~~which~~ that requires a system in all buildings where fissile materials are handled to broadcast alarms in the event of a criticality accident. Without functioning criticality alarm systems in these buildings, production operations are stopped.

The FY 1996 appropriation will be used to continue construction of communications network and initiate construction of criticality alarm system.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

NUCLEAR MATERIALS AND FACILITIES STABILIZATION
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: Plantwide Fire Protection, Phases I and II, Savannah River Site, Aiken, South Carolina	2a. Project No. 90-D-149 2b. Construction Funded	A05:SR-1002-LT

SIGNIFICANT CHANGES

- Transferred to Environmental Management from Defense Programs in FY 1996.

- FY 1996 funding will not be requested while the Department of Energy, Savannah River, implements budget reduction initiatives. Due to mission changes, 85 percent of the FY 1994 appropriation was used to offset other Energy Department priorities, and 76 percent of the FY 1995 Congressional request was similarily applied to budget reductions which are reflected under section 7 of the datasheet. A change request is currently being processed to significantly reduce the TEC and outyear appropriation requests.

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IV. B. Construction Funded Project Descriptive Summary

ADS: SR-1002-L1

1. Project Title and Location: Project 90-D-149, Plantwide Fire Protection, Phases I and II, Savannah River Site, Aiken, South Carolina b/

TEC: $420,000 a/
TPC: $458,031

Start Date: 1st Qtr. FY 1990 Completion Date: 4th Qtr. FY 2001

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligations	Costs
1990	$ 4,900	$ (74) c/	$ 4,826	$ 4,163
1991	49,100	(36,002) d/	13,098	6,367
1992	39,000	0	39,000	15,537
1993	39,685	0	3,340	23,268
1994	25,950	(22,200) e/	40,095	12,764
1995	5,000	0	5,000	22,983
1996	0	0	0	19,277
1997	24,000	0	24,000	19,900
1998	62,500	0	62,500	54,000
1999	85,485	0	85,485	73,000
2000	72,856	0	72,856	83,213
2001	69,800	0	69,800	85,528

3. Narrative:

This is a Major Systems Acquisition project to achieve an acceptable level of fire safety at the Savannah River Site (SRS). The required fire protection upgrades typically cover four areas: early detection, suppression, personnel notification and emergency egress.

The detection upgrades include the installation of smoke detectors and heat sensing devices, and the appropriate conduit and control panels.

The suppression upgrades include installation of area fire water supply systems (including tanks, underground piping, pumps and chemical treatment systems); installation of headers and automatic sprinkler systems, or the expansion of existing ones (with monitoring capability alarmed to central locations); interior hose stations; fire water collection and distribution system (including curbing, floor drains and piping) upgrades; and sealing penetrations to prevent fire and smoke spread.

The personnel notification upgrades include central/manual alarm and notification systems, and local notification devices.

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a/ A change request is currently being processed to significantly reduce the TEC and outyear appropriations.
b/ Transferred to Environmental Management from Defense Programs in FY 1996.
c/ FY 1990 sequestration of funds.
d/ Reflects FY 1991 approved reprogramming (-$36,000,000) and FY 1991 accounting adjustment (-$2,000).
e/ $7,200,000 was transferred to reserve to offset the Department of Energy's (DOE's) FY 1995 budget request; $6,141,000 was used to offset the FY 1995 Amendment for the Stockpile Management Program; and $8,859,000 was used to support the FY 1994 New Production Reactor shortfall.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 90-D-149, Plantwide Fire Protection, Phases I and II, Savannah River Site, Aiken, South Carolina (Continued)

3. Narrative:

The emergency egress upgrades include upgrading existing walls, lighting, doors, ceilings, and stairways to meet required fire ratings; enclosing corridors and stairways and adding stairways to ensure safe egress under fire conditions; and other passive protection upgrades to improve life safety conditions in the facilities.

The necessary upgrades are determined by performing a graded Fire Hazard Analysis (FHA) or assessment on each facility that is in the project scope. The FHA and cost benefit analyses are used to determine the fire protection upgrades appropriate for each facility. The project also includes domestic water systems in the reactor areas.

Cost savings and mission related scope reductions have delayed implementation of planned upgrades; therefore, additional appropriations are not required and have not been requested in FY 1996. Renewed funding in FY 1997 is required for completion of the project.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

OVERVIEW

COMPLIANCE AND PROGRAM COORDINATION

The Compliance and Program Coordination program is responsible for supporting activities that crosscut all offices within the Office of Environmental Management (EM) and across the Department of Energy (DOE). It functions as an independent, internal organization that provides the EM program with policy and guidance, oversight and assessment, and technical support and assistance. This cross-cutting function is unique within EM and is specifically focused on the EM priorities of eliminating urgent threats, providing a safe workplace, achieving managerial and financial control, becoming more outcome oriented, focusing technology development, and establishing strong stakeholder partnerships.

The program's department-wide perspective helps Compliance and Program Coordination develop policy and guidance that is consistent across EM, ensure that site-specific performance measurement systems are linked to long-term activities set forth in strategic and implementation plans, address EM cross-cutting vulnerabilities and technical needs with targeted technical assistance, and centrally coordinate interdependent activities.

The central mission of Compliance and Program Coordination is to support the organization in achieving compliance with applicable laws, regulations, DOE Orders, and accepted industry standards and practices and to ensure proper coordination and oversight of EM activities. Within this broad scope, the program provides many specific services and functions that directly support the overall EM mission and contribute to EM excellence. The program's efforts span the EM Offices of Planning and Resource Management, Waste Management, Environmental Restoration, Technology Development, and the Office of Nuclear Materials and Facilities Stabilization.

PROGRAM OVERVIEW

The specific activities of Compliance and Program Coordination focus on environment, safety and health; engineering and cost evaluation; technical operations; transportation management; emergency management; laboratory management; quality management/quality assurance; Federal Manager's Financial Integrity Act compliance; self-evaluation; and site coordination. These activities are distributed across seven offices: Quality Assurance (QA)/Integration/Quality Improvement Teams (QIT)/Special Projects, the Site Coordination staff, the Office of Environmental Activities, the Office of Safety and Health, the Office of Engineering and Cost Management, the Office of Operations Assessment, and the Office of Transportation, Emergency Management, and Analytical Services.

QA/Integration/QIT/Special Projects

The QA/Integration/QIT/Special Projects activities provide support to the program's five line organizations and the EM Site Coordination function. The QA develops and oversees implementation of the EM Quality Assurance Program for EM Headquarters, DOE Field Offices, and facilities. The Office also coordinates a number of EM-wide initiatives including the EM Quality Improvement Teams. The Quality Improvement Teams were established at both Headquarters and Operations Office levels to shape, prioritize, and develop implementation plans for key management initiatives addressing issues such as project definition, performance measures, and contracting strategies.

Site Coordination

The EM Site Coordination Staff was established to improve communications between EM Headquarters and Field Offices, ensure consistent/unified EM communications, coordinate program reviews, and assist with efforts involving facilitation, networking, and negotiation.

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Office of Environmental Activities

The Office of Environmental Activities provides technical assistance and support to EM programs and field organizations, and conducts internal assessments to enhance compliance with environmental policy, regulations, DOE Orders, and other requirements. The Office develops and coordinates the implementation of EM programmatic guidance, conducts site and EM-wide integrated and independent analyses of environmental performance data, and assists EM program and field organizations in their understanding of environmental regulatory and technical requirements. The Office is also responsible for identifying environmental regulatory issues that may affect operations, coordinating, and working with the Office of General Counsel to ensure development of timely and effective legal guidance, and, in consultation with other EM managers and the General Counsel, providing expert advice to the director on legislative, regulatory, institutional, and policy matters that arise with respect to the programs and activities of EM. The Office uses its EM-wide perspective to assist in the development of cost-effective and reasonable solutions to common environmental problems throughout the EM complex, provides subject matter experts for all environmental requirements, assists site coordinators on environmental compliance matters, and provides an objective, independent view of various technical environmental management concerns.

Office of Safety & Health

The Office of Safety and Health ensures that programs and projects managed by the Assistant Secretary for Environmental Management (EM) are conducted with adequate protection of the safety and health of workers and the public, and are in compliance with applicable safety and health laws and regulations. This mission cuts across all major EM activities - Waste Management, Environmental Restoration, Decontamination and Decommissioning, Nuclear Materials and Facilities Stabilization, and Technology Development. The Office also provides support to the four focus areas: Technical Assistance; Policy and Guidance; Program Coordination; and Appraisal and Analysis.

Office of Engineering & Cost Management

The Office of Engineering and Cost Management provides independent monitoring and appraisal, programmatic guidance, performance analysis, and technical assistance in the areas of engineering and cost management. It also assists Headquarters and the field line organizations with the application of cost, technical, and regulatory requirements. It also assists in performing cost evaluations, benchmarking technical and program/project management components, conducting independent assessments of the adequacy of cost and program/project controls, and evaluating program performance.

Office of Operations Assessments

The Office of Operations Assessment provides independent monitoring, appraisal, and technical assistance to EM line organizations. These efforts are focused on enhancing compliance with Conduct of Operations policies, DOE Orders, and other requirements, and on improving technical field operations. The Office evaluates operations at all DOE sites and facilities under the responsibility of EM. It also evaluates policies addressing Conduct of Operations Requirements and Operations Office assessment capabilities, techniques, and performance. The Office of Operations Assessment includes the function of the EM Radiological Control Program Advisor. The Radiological Control Program Advisor is the Program Office focal point for DOE Operations Office Managers and contractor organizations on matters that affect radiological control programs including practices, policies, procedures, and performance.

Office of Transportation, Emergency Management, and Analytical Services

The Office of Transportation, Emergency Management, and Analytical Services is responsible for supporting three specific programs that cross-cut all offices within EM and DOE. Activities are conducted in conjunction with other EM and DOE Program Offices to ensure proper coordination and line management control. The Office of Transportation, Emergency Management, and Analytical Services develops the policy, guidance, and framework for safe, secure, and economical transportation of DOE hazardous materials, and other wastes including radioactive materials. The Office also provides technical assistance to other EM offices; develops the policy, guidance, and framework for emergency management; and supports the development of a comprehensive emergency management capability to plan for, respond to, and mitigate incidents and emergency situations that occur at DOE facilities or during transportation activities. The Office of Transportation, Emergency Management, and Analytical

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Services supports EM Program Offices to ensure the availability of credible, cost-effective site, and waste characterization data vital to decision making for waste operations, enviornmental remediation, health, safey, and regulatory compliance. The Office of Transportation, Emergency Management, and Analytical Services also coordinates outreach activities with other EM and DOE Program Offices to ensure an integrated and effective program for communicating to, and interacting with, the general public and other institutions on transportation, emergency response, and analytical services.

Performance Measures

FY 1996 performance measures for the Office of Compliance and Program Coordination include:

I. Conduct significant appraisals and provide technical assistance and guidance in improved program performance, environmental compliance, and workplace safety and health.

II. Complete Health and Safety Plans for Resource Conservation and Recovery Act (RCRA) facilities and Safety Analysis Reports or preliminary Hazards Analyses for nuclear facilities and at all major facilities as appropriate.

III. Develop Standards/Requirements Identification Documents (S/RID) for all major Environmental Management program facilities.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(obligations in thousands)

SUMMARY OF CHANGES

Compliance and Program Coordination

FY 1995 Appropriation	$ 0
- Adjustments	0
FY 1995 Adjusted	$ 0
- Analytical Services Management	
Target Transfer from the Technology Development Program	+16,201
Reduction for higher priority initiatives	-670
- Emergency Management	
Target Transfer from the Technology Development Program	+2,962
Increase funding to provide for additional workscope	+1,371
- Hazardous Materials Training Program	
Target Transfer from Technology Development Program	+13,000
Increase for additional funding requirements	+9,541
- Liaison and Communications	
Provide funding for new workscope	+542
- Transfer from previous Program Direction unit ($18,269) and the Technology Development Program ($5,285) funding required to address cross-cutting and centrally coordinated activities	+23,554
- Program Direction	
Transfer from Technology Development Program (26 FTEs)	+2,574
Transfer from Office of Nuclear Materials and Facilities Stabilization (32 FTEs for Radiological Environmental Services Laboratory)	-4,782
Transfer from previous Program Direction decision unit (91 FTEs)	+7,394
FY 1996 CONGRESSIONAL BUDGET REQUEST	$ 81,251

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Compliance and Program Coordination

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Compliance/Program Coordination					
Operating Expenses	$ 0	$ 0	$ 0	$ 0	$ 50,801
Construction	0	0	0	0	15,000
Capital Equipment	0	0	0	0	700
Subtotal, Compliance/Program Coordination	$ 0	$ 0	$ 0	$ 0	$ 66,501
Program Direction					
Operating Expenses	0	0	0	0	14,750
Subtotal, Compliance/Program Coordination	$ 0	$ 0	$ 0	$ 0	$ 81,251
TOTAL	$ 0	$ 0	$ 0	$ 0	$ 81,251
Summary					
Operating Expenses	$ 0	$ 0	$ 0	$ 0	$ 65,551
Construction	0	0	0	0	15,000
Capital Equipment	0	0	0	0	700
Total Program	$ 0	$ 0	$ 0	$ 0	$ 81,251
Staffing (FTEs)	0	0	0	0	149

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

Compliance and Program Coordination

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Albuquerque Operations Office	$ 0	$ 0	$ 0	$ 0	$ 1,757
CHICAGO OPERATIONS OFFICE					
Chicago Operations Office	$ 0	$ 0	$ 0	$ 0	$ 4,822
IDAHO OPERATIONS OFFICE					
Idaho Operations Office	$ 0	$ 0	$ 0	$ 0	$ 5,622
NEVADA OPERATIONS OFFICE					
Nevada Operations Office	$ 0	$ 0	$ 0	$ 0	$ 1,784
OHIO FIELD OFFICE					
Ohio Field Office	$ 0	$ 0	$ 0	$ 0	$ 286
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge Operations Office	$ 0	$ 0	$ 0	$ 0	$ 1,742
ROCKY FLATS OFFICE					
Rocky Flats Office	$ 0	$ 0	$ 0	$ 0	$ 383
RICHLAND OPERATIONS OFFICE					
Richland Operations Office	$ 0	$ 0	$ 0	$ 0	$ 25,011
OAKLAND OPERATIONS OFFICE					
Oakland Operations Office	$ 0	$ 0	$ 0	$ 0	$ 259
SAVANNAH RIVER OPERATIONS OFFICE					
Savannah River Operations Office	$ 0	$ 0	$ 0	$ 0	$ 286
WASHINGTON HEADQUARTERS					
Washington Headquarters	$ 0	$ 0	$ 0	$ 0	$ 39,299

FIELD OFFICE FUNDING BY SITE - Compliance and Program Coordination (cont'd)

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
TOTAL	$ 0	$ 0	$ 0	$ 0	$ 81,251

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

COMPLIANCE AND PROGRAM COORDINATION

I. **Preface:** Compliance/Program Coordination

A. QA/Integration/QIT/Special Projects

In FY 1996 Quality Assurance will focus on 1) providing assistance to the Operations Offices and line organizations to evaluate contractor's Quality Assurance Programs, and 2) evaluating and providing assistance to organizations on Customer Service Plans. The Quality Improvement Teams will continue as the focal point for EM productivity improvements. Also, QA/Integration/QIT/Special Projects will enhance management of Office of Compliance and Program Coordination activities and contractor oversight.

B. Site Coordination Staff

The Site Coordination Staff will provide a single Headquarters focus on EM-wide requirements, issues, and initiatives. The Staff coordinated planning for each site to ensure integration across line organizations and consistency with EM goals and priorities.

C. Office of Environmental Activities

The Office of Environmental Activities will focus on re-evaluating the interagency agreements governing the cleanup of the Department of Energy's facilities, and developing technical environmental policy, and implementing guidance. The Office will also provide technical assistance and support to the Office of Environmental Management, both at Headquarters and in the field, on environmental compliance issues. Re-evaluation of the interagency clean-up agreements is necessary to ensure that the agreements represent effective, technically valid remedial strategies at the Department's facilities and show progress toward meeting national risk reduction priorities using achievable schedules and recognizing the need to reduce the Federal budget. This activity will be conducted jointly by DOE and the Environmental Protection Agency staff, the States, and other stakeholders. The EM technical environmental policy and guidance, as well as technical assistance and support, is necessary to ensure that EM activities are being conducted in compliance with the environmental legislation, regulation, and other environmental requirements, including interagency agreements, that are imposed on the program.

D. Office of Safety & Health

The Office of Safety & Health (S&H) will continue to provide the following functions: 1) develop, coordinate, and distribute EM's S&H guidance and provide technical expertise to EM on S&H issues; 2) analyze S&H performance information and reports to provide technical support and consultation to EM offices and management in identifying solutions to problems and improving effectiveness; 3) ensure implementation of the Department's and EM's S&H requirements by assessing program adequacy and implementation and trending S&H program performance; and 4) serve as the EM point of contact for communications and major program interaction with other DOE offices and other agencies on S&H issues. The Office will initiate new activities in field reviews and evaluations of S&H programs and status.

E. Office of Engineering & Cost Management

An increasingly constrained national budget is requiring a sharper focus on cost management within the program. The Office of Engineering & Cost Management will continue to assist the field sites improve their capabilities to analyze cost data and program/project performance trends, disseminate "lessons learned" across field sites and measure its activities against the "best practices" as defined by industry. The Office of Engineering & Cost Management will help the field sites demonstrate improved cost and schedule estimating performance. It will also provide resources to meet changing program requirements with a broader understanding and analysis of cost data, providing tools to manage costs,

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increasing operational effectiveness, and measuring the effects of decisions against the approved operations budget in order to gain the efficiencies and productivity required by the EM stakeholders.

F. Office of Operations Assessment

The Office of Operations Assessment will continue to develop and promulgate operations, training, radiological controls, facility representatives, and maintenance information to all EM field activities. Continue implementation of performance measures and indicators for conduct of operations and radiological control programs and provide feedback of the analysis results to the field. Monitor field performance in implementing requirements of federal regulations pertaining to conduct of operations, maintenance, and radiological controls (10 CFR 830 and 10 CFR 835).

G. Office of Transportation, Emergency Management, and Analytical Services

I. Liaison & Communication

This program is responsible for facilitating and coordinating outreach activities under Compliance and Program Coordination to assure an integrated, consistent, effective, and efficient program for communicating to, and interacting with, the many institutional and general publics. The program supports the Transportation Internal Coordination (TIC) Working Group and facilitates interaction between DOE programs on transportation emergency management institutional issues. Information and outreach activities support emergency management and analytical services programs.

II. Emergency Management

Provides for a comprehensive program to plan for, respond to, and mitigate incidents and emergency situations, which could occur at EM facilities that support Waste Management, Environmental Restoration, and Nuclear Materials and Facilities Stabilization activities, or during DOE-wide transportation of non-weapon material. The program consists of development and maintenance of emergency plans, systems, and capabilities including an Operational Emergency Management Team (OEMT), emergency training, emergency drills and exercises, and a Readiness Assurance Program. It also includes occurrence notification and tracking activities and participation in the Office of Environmental Safety and Health (EH)/EM initiative for hazardous waste operations training for emergency responders. The EM Emergency Management organization consists of Emergency Preparedness Programs for Transportation and EM Facilities, EM Occurrence Reporting and Processing, and Hazardous Materials Training.

II.A. Hazardous Materials Management and Emergency Response Facility

The Hazardous Materials Management and Emergency Response Facility is designed to be a training facility for hazardous material workers and supporting emergency response personnel. The facility will provide both routine site work, occupational safety training and emergency response training to site and regional emergency response personnel. The facility is being constructed on an 80-acre site at the Hanford Washington reservation and will contain both classroom training and practical hands-on facilities for exercising hazardous worker and emergency response skills. Training will be centered on hazardous materials specific to the Richland site and will afford practice on equipment (fixed and mobile) that personnel could come into contact within the course of executing their duties. The facility is designed to permit modular modification and/or replacement of training components as the environment and experience indicate.

III. Analytical Services Management

Provides direction, guidance, and technical assistance on DOE EM site, facility, and waste characterization activities to assure collection and management of cost-effective environmental data of sufficient quality to meet decision needs. Characterization constitutes an estimated 25 percent of EM's cost and is crucial as a technically valid and credible basis for decisions on site and facility remediation and on waste treatment, storage, and disposal. Analytical Services Guidance, and technical assistance to the field on Data Quality Objectives (DQO's) and the Streamlined Approach for Environmental Restoration (SAFER), provides support and hands-on training in effective characterization planning. Guidance and assistance in establishing and maintaining adequate quality assurance programs and implementing effective data validation and

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I. Compliance/Program Coordination (Cont'd)

assessment ensure the quality and reliability of characterization and compliance monitoring data. Analytical Services also provides guidance, coordination, and oversight of analytical services management in the field, assessing the availability of sufficient DOE and commercial analytical laboratory capacity to meet EM needs, including evaluation of "make or buy" decisions for acquiring cost-effective laboratory services.

H. Program Direction

Provides for salaries, benefits, travel, and related costs for the Federal employees at Headquarters and the DOE Field Offices who oversee and support the Compliance and Program Coordination program and Transportation Management program activities. It also includes costs for Federal employees at the Radiological and Environmental Sciences Laboratory in Idaho. In addition to the day-to-day management, direction, and oversight of these programs, major activities are underway to improve the management systems employed by the Compliance and Program Coordination program. These systems include documentation of management plans and procedures and coordinating management efforts with other EM organizations.

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II. A. Summary Table: Compliance/Program Coordination

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
QA/Integration/QIT/Special Projects	$ 0	$ 0	$ 2,184	$ 2,184
Site Coordination Staff	0	0	813	813
Office of Environmental Activities	0	0	2,309	2,309
Office of Safety and Health	0	0	8,533	8,533
Office of Engineering and Cost Management	0	0	6,681	6,681
Office of Operations Assessment	0	0	3,034	3,034
Office of Transportation, Emergency Management, & Analytical Services				
Liaison and Communications	0	0	542	542
Emergency Management				
Transportation Emergency Preparedness Program (TEPP)	0	0	3,223	3,223
EM Facility Emergency Preparedness Program	0	0	1,110	1,110
Subtotal, Emergency Management	$ 0	$ 0	$ 4,333	$ 4,333
Hazardous Materials Training Program				
Operating	$ 0	$ 0	$ 7,541	$ 7,541
Construction	0	0	15,000	15,000
Subtotal, Hazardous Materials Training Program	$ 0	$ 0	$ 22,541	$ 22,541
Analytical Services				
Resource Management	$ 0	$ 0	$ 3,142	$ 3,142
Methods & Instrumentation Program	0	0	2,492	2,492
Quality Assurance	0	0	4,863	4,863
Data Integration	0	0	4,334	4,334
Capital Equipment	0	0	700	700
Subtotal, Analytical Services	$ 0	$ 0	$ 15,531	$ 15,531
Subtotal, Office of Transportation, Emergency Management, & Analytical Services	$ 0	$ 0	$ 42,947	$ 42,947
Program Direction	$ 0	$ 0	$ 14,750	$ 14,750
Total, Compliance/Program Coordination	$ 0	$ 0	$ 81,251	$ 81,251

2540

II. B. Laboratory and Facility Funding Table: Compliance/Program Coordination

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
Albuquerque Operations Office	$ 0	$ 0	$ 1,757	$ 1,757
Chicago Operations Office	0	0	4,822	4,822
Idaho Operations Office	0	0	5,622	5,622
Nevada Operations Office	0	0	1,784	1,784
Oak Ridge Operations Office	0	0	1,742	1,742
Oakland Operations Office	0	0	259	259
Ohio Field Office	0	0	286	286
Richland Operations Office	0	0	25,011	25,011
Rocky Flats Office	0	0	383	383
Savannah River Operations Office	0	0	286	286
Washington Headquarters	0	0	39,299	39,299
Total, Compliance/Program Coordination	$ 0	$ 0	$ 81,251	$ 81,251

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Compliance/Program Coordination			
QA/Integration/QIT/Special Projects	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	QA activities will include evaluating quality assurance programs and customer service plans, providing lessons learned workshops, measuring the progress of Total Quality Management activities, and maintenance and updating of Quality Assurance Program and Customer Service Plans. Continue Quality Improvement Team initiative to integrate EM productivity improvements. Integrate/enhance management of activities and contractor oversight; improve office performance measures. $ 2,184
Site Coordination Staff	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	Coordinate EM/Headquarters (HQs) planning for each site. Review documentation relating to site performance. Monitor planned internal and external facility assessments. Maintain Executive Tracking System and Site Action Boards. Coordinate EM HQs/Field Office meetings. $ 813

2542

III. Compliance/Program Coordination (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Office of Environmental Activities	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	Review major DOE interagency clean-up agreements and partner with EPA and the States to ensure the agreements represent effective, technically valid remedial strategies while meeting risk reduction priorities and achievable schedules. Develop management plan; establish criteria, priorities, and schedules for sites to be reviewed; conduct site visits; and review agreements from technical perspective and factor results into negotiation strategies. Develop environmental technical policy and implement guidance to provide technical assistance and support on environmental compliance issues, e.g.; review of Orders/Agreements, and Site Treatment Plans under the Federal Facility Compliance Agreement (FFCA); review the implementation of the Agreement-in-Principle program; Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (RCRA/CERCLA) Integration and Overlap guidance; CERCLA Resuthorization guidance; Clean Air Act guidance; Clean Water Act guidance; and Waste Management Order/Regulation. $ 2,309

2543

III. Compliance/Program Coordination (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Office of Safety and Health	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	Will continue major ongoing programs such as: the Workplace Safety Improvement Program (WISP), which is a long-term program to improve the safety & health at EM facilities; the Performance Index program, a mangement tool to monitor the status of safety and health performance; the Standards/Requirements Identification document (S/RIDSs) project, the identification and implementation of necessary and sufficient requirements and standards to protect the workers and public. Technical assistance, guidance, and program coordination will also continue. The Office of Safety and Health will significantly strengthen its field review and evaluation program to more fully ascertain the adequacy of DOE field and management programs in protecting workers and the public, particularly focusing on responsibilities that have been recently delegated to the field. The reviews will focus on management processes, programs, and procedures, as well as the resources, for instituting effective safety and health programs. Areas of investigation will include the contractor's and field office's ability to develop and utilize: 1) safety documentation, such as Health and Safety Plans, Safety Analysis Reports, and associated implementation plans; 2) Standards/Requirements Identification documents; and 3) workplace safety improvement initiatives. The reviews and evaluations will be conducted by small groups of safety and health professionals who will provide timely feedback to the contractors and field offices with recommendations for improvements.

2544

III. Compliance/Program Coordination (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Office of Safety and Health (Cont'd)			
			$ 8,533
Office of Engineering and Cost Management	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	Provide Cost Management support and assistance to Headquarters and field sites to support the EM-wide efforts to improve the cost-effectiveness of EM activities. Expand the EM resources and capabilities to perform cost analysis on all major projects. Establish a network of cost professionals; identify cost data bases, cost and schedule estimating models, tools, and procedures; conduct benchmarking; and disseminate "lessons learned." Provide technical analysis, program/project management and change control, and special studies to support and assist field activities and the EM integrated validation efforts. Provide independent review and analysis of technical and cost management issues, support self-assessment activities at field sites, and coordinate cross-cutting cost and technical issues.
			$ 6,681
Office of Operations Assessment	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	These activities were budgeted for in the Analysis, Education, and Risk Management budget.	Performance-based assessments will continue to be conducted at all EM facilities on a regular schedule and results of assessments will be used to improve contractor's operations performance.

2545

III. Compliance/Program Coordination (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Office of Operations Assessment (Cont'd)			Operational performance data (assessment results, performance indicators, performance measures, ORPS reports) will be analysed and information regarding significant trends will be provided to the Operations Office Managers. Oversee contractors compliance with all schedules contained in federal nuclear safety rule implementation plans. $ 3,034
Office of Transportation, Emergency Management, & Analytical Services			
Liaison and Communications	These activities were supported under the Technology Development Program.	These activities were supported under the Technology Development Program.	Continue to develop and maintain forums for interaction with stakeholders along transportation corridors on emergency preparedness, training, and technical assistance. The program will continue to integrate stakeholder needs with other EM programs, such as the Spent Fuel program, Waste Isolation Pilot Plant, and EM's Office of Public Accountability to ensure consistent approaches to emergency management planning and training. Information development and dissemination through videos, exhibits and other means support field office and program initiatives in training and technical assistance. $ 542

2546

III. Compliance/Program Coordination (Cont'd):
Office of Transportation, Emergency Management, & Analytical Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Emergency Management			
Transportation Emergency Preparedness Program (TEPP)	These activities were supported under the Technology Development Program.	These activities were supported under the Technology Development Program.	Continue implementation of TEPP through the Emergency Management Division's multi-year program plan. Continue to promulgate planning, training, and exercise guidance to DOE fild elements. Develop and issue clarifying guidance on DOE roles and responsibilities for response to transportation incident/accidents involving hazardous materials. Continue training support for Radiation Assessment Program (RAP) teams and State/Tribal/Local (STL) emergency responders. Apply the modular training approach developed for DOE-internal TEP training to training support for STLs. Continue to develop stronger partnerships with stakeholders for improved transportation emergency preparedness through a STL working group on transportation issues Continue to expand planning, training, and the Transportation Accident Exercise (TRANSAX) and Waste Isolation Pilot Plant Transportation Emergency Exercise (WIPPTREX) exercise programs to areas of the country beyond the Western States transportation corridor. Investigate application of new and/or existing techn logies to enhance transportatic preparedness and emergency re. onse.
			$ 3,223

2547

III. Compliance/Program Coordination (Cont'd):
Office of Transportation, Emergency Management, & Analytical Services (Cont'd):
Emergency Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
EM Facility Emergency Preparedness Program	These activities were supported under the Technology Development Program.	These activities were supported under the Technology Development Program.	Continue to maintain EM Operational Emergency Management Plan. Complete the development and implementation of standard operating procedures. Continue initial and refresher training of Operational Emergency Management Team (OEMT) members through utilization of the EM Training Program Plan. Maintain training support for DOE RAP Teams. Continue implementation of the EM Drill and Exercise Program Plan, including a system-wide exercise at a selected EM facility and use of Headquarters control cells for limited participation in other exercises. Continue review of EM Operations Offices ERAPs and development of the annual EM Summary ERAP. Implement the unified concept of operations for emergency management and OEMT operations. Assist EM Field elements with the implementation of emergency response requirements of 29 CRF 1910.120.
			$ 1,110
Subtotal, Emergency Management			$ 4,333

2548

III. Compliance/Program Coordination (Cont'd):
Office of Transportation, Emergency Management, & Analytical Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Hazardous Materials Training Program			
Operating	These activities were supported under the Technology Development Program.	These activities were supported under the Technology Development Program.	Continue to provide overall program management and project administration for the Hazardous Materials Training Program training facility. Provide assistance and program guidance for transitioning from a temporary facility to full operations. Continue to assist in the development of hazardous worker safety and health education programs pertaining to emergency response. $ 7,541
Construction			The Hazardous Materials Management and Emergency Response Training Center for worker safety will be a new 80-acre training site for hazardous material workers and emergency responders. This training center will be constructed at the southern end of the Hanford Site. Design & Construction of the Training Center will be completed in two phases. Phase I will include all site preparation activities such as; Mechanical systems, utilities, roads; site work; training pads; and characterization, and remediation sites. Phase II activities include all above-grade activities such as; buildings and towers; and installation of above-grade training props. $ 15,000

2549

III. Compliance/Program Coordination (Cont'd):
Office of Transportation, Emergency Management, & Analytical Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Subtotal, Hazardous Materials Training Program			$ 22,541
Analytical Services			
Resource Management	These activities were supported under the Technology Development Program.	These activities were supported under the Technology Development Program.	Support EM analytical services management infrastructure and respond to Inspector General (IG) recommendations by 1) developing data critical to field make-or-buy decision: a) EM analytical needs and DOE and commercial lab capacity, b) costs of DOE and commercial analytical services, and c) tracking on-going laboratory utilization; and 2) standardizing and streamlining analytical data procurement, review and update through; a) development and support of electronic data deliverable system, b) guidance and assistance on standard contracts for commercial lab services, and c) guidance and assessments of field sample management program effectiveness.
			$ 3,142
Methods & Instrumentation Program	No activity.	No activity.	To minimize cost, the existing EM radiochemistry Methods Compendium program will be consolidated with the DOE Environmental Measurements Lab (EML) HASL 300 Methods Manual. The internationally recognized HASL Manual is the basis for EPA's low level rad methods for drinking water analyses. The consolidated manual will include analytical methods for safe and cost effective radioactive and mixed waste sample analyses, consistent with regulatory requirements that also satisfy unique requirements for handling EM wastes. Coordinate with

2550

III. Compliance/Program Coordination (Cont'd):
Office of Transportation, Emergency Management, & Analytical Services (Cont'd):
Analytical Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Methods & Instrumentation Program (Cont'd)			regulators and professional groups to develop, validate, and promote use of cost and time-efficient field methods.
			$ 2,492
Quality Assurance	These activities were supported under the Office of Technology Development.	These activities were supported under the Office of Technology Development.	Support compliance with DOE Orders 5700.6C and 5400.1, and respond to IG recommendations by: 1) providing DOE analytical lab quality assurance guidance and assessment, and through 1) performance evaluation programs for mixed waste and low level radiation samples, b) developing an Integrated Performance Evaluation Program (IPEP), to consolidate and produce statistical reports on both DOE and EPA performance evaluation programs, and c) integrated assessment of field sampling and analysis programs at six operations offices; and 2) standardizing national QA programs and minimizing redundancy of effort by: a) implementing a process for reciprocity on lab evaluations between DOE Operations Offices and Management and Operations (M&O) contractors, b) supporting interagency efforts to establish a national lab accreditation program, and c) coordinating with DOE Environment, Safety and Health to expand EM sampling and analysis QA program to other DOE programs. Provide support to the Radiological and Environmental Services Lab (RESL) programs supporting EM QA program as well as EM in DOE dosimetry lab accreditation.
			$ 4,863

2551

III. Compliance/Program Coordination (Cont'd):
Office of Transportation, Emergency Management, & Analytical Services (Cont'd):
Analytical Services (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Data Integration	No activity.	No activity.	Promote cost savings and enhance credibility of EM environmental data through 1) guidance, training, and technical assistance to the field in: a) applying data quality objectives planning to all EM sampling and analysis activities, and b) streamlining and automating analytical data verification and validation processes, particularly for radiochemistry; and 2) working with EPA on developing and enhancing the data quality assessment process to maximize usability of data in environmental decision making.
			$ 4,334
Capital Equipment	These activities were supported under the Office of Technology Development.	These activities were supported under the Office of Technology Development.	Provide equipment to support Quality Assurance Performance Evaluation programs and to evaluate new analytical instrumentation.
			$ 700
Subtotal, Analytical Services			$ 15,531
Subtotal, Office of Transportation, Emergency Management, & Analytical Services			$ 42,947

2552

III. Compliance/Program Coordination (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Program Direction	Program Direction activities were budgeted for in the Analysis, Education, and Risk Management budget.	Program Direction activities were budgeted for in the Analysis, Education, and Risk Management budget.	Funding by Object Class: Salaries/Personnel Compensation $10,881 Benefits 2,388 Travel 1,481 --- $14,750 Provides for 109 FTEs at Headquarters to manage program activities. Also provides for 40 FTEs, which support program management and administrative functions at the various Department field offices. 149.0 FTE $ 14,750
Compliance/Program Coordination			149.0 FTE $ 81,251

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

OFFICE OF COMPLIANCE AND PROGRAM COORDINATION
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands. Narrative material in whole dollars)

IV. A. Project Summary Listing

Technology Development - Defense

1. Construction Funded:

Project No.	Project Title	Previous Appropriations	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	Unapprop Balance	TEC
95-E-600	Hazardous Materials Training Center; Richland, Washington	$ 0	$ 0	$ 7,000	$15,000	$ 7,900	$29,900

2. Operating Expense Funded:

None

TOTAL, Technology Development (Defense)	$ 0	$ 0	$ 7,000	$15,000	$ 7,900	$29,900
TOTAL NUMBER OF LINE-ITEMS	(0)	(0)	(1)	(1)	(1)	

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IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location — Project 95-E-600 Hazardous Materials Training Center, Richland, Washington — TEC: $29,900

Start Date: 4th Qtr. FY 1995 — Completion Date: 3rd Qtr. FY 1997

2. Financial Schedule (Federal Funds):

Fiscal Year	Appropriation	Adjustments	Obligations	Costs
1995	$ 7,000	$ 0	$ 7,000	$ 3,800
1996	15,000	0	15,000	15,300
1997	7,900	0	7,900	10,800

3. Narrative:

This project will be a new 80-acre training site for hazardous material workers and emergency responders. The facility will provide state-of-the-art performance based training. This project will be constructed on the Hanford Site.

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OVERVIEW

ANALYSIS, EDUCATION, AND RISK MANAGEMENT

The Analysis, Education, and Risk Management activity provides for the Federal staffing resources and associated funding to plan, direct, and manage the Department's Environmental Management (EM) Program. The requested funding for FY 1996 will provide for crosscutting activities which support the overall EM mission. Program activities encompass the Administrative Support area which includes funding for salaries and benefits for 313 FTEs, including support for the Assistant Secretary's staff; contractual services necessary to accomplish program activities that include overall management; and education and training activities. Included under this decision unit is funding requested for the Office of Integrated Risk Management and the Office of Public Accountability.

As a pilot project for the Government Performance and Results Act, the Office of Environmental Management is required to develop an Annual Performance Plan. Within Analysis, Education, and Risk Management, the FY 1995 efforts focused on improving processes for activities such as budget formulation and execution, data systems development, and workforce restructuring. Planned performance measures improvements for FY 1996 will continue to focus on those processes as well as greater emphasis on customer satisfaction and productivity improvements.

As a result of the Environmental Management reorganization, the budget structure for the Headquarters Program Direction decision unit has changed. This account has been renamed Analysis, Education, and Risk Management. It will continue to provide salaries, benefits, and contractual support for the Office of the Assistant Secretary and other crosscutting functions such as public accountability, management and finance, and strategic planning and analysis. Additional activities have been added in FY 1996 under the reorganization. These are the education programs and risk management function, both transferred from the Office of Technology Development. The Public Accountability program has been strengthened. In addition to direct program funds for these activities, salaries, benefits, and contractual support have been included. Also included are salaries, benefits, and contractual services for the newly centralized budget organization.

The goal of the Integrated Risk Management program is to provide credible risk based decision-making for the Environmental Management Program. This will be accomplished by developing risk assessment and management practices, with meaningful stakeholder involvement, which provide for protection of human resources. It includes developing the tools, processes for risk management including evaluation of land use planning, acceptable risks, cost-benefit analysis, and uncertainty analysis.

The mission of the Public Accountability program is to strengthen partnerships with stakeholders; build trust and credibility; and open the Department of Energy's (DOE) decision-making process.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

Analysis, Education, and Risk Management

Activity a/	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Analysis, Education, and Risk Management					
Operating Expenses	$ 82,427	$ 83,748	$ 0	$ 83,748	$ 155,616
Capital Equipment	9,469	1,200	0	1,200	1,406
Subtotal, Analysis, Education, and Risk Management	$ 91,896	$ 84,948	$ 0	$ 84,948	$ 157,022
TOTAL	$ 91,896	$ 84,948	$ 0	$ 84,948	$ 157,022
Summary					
Operating Expenses	$ 82,427	$ 83,748	$ 0	$ 83,748	$ 155,616
Capital Equipment	9,469	1,200	0	1,200	1,406
Total Program	$ 91,896	$ 84,948	$ 0	$ 84,948	$ 157,022
Staffing (FTEs)	203	383	0	383	313

Authorizations:
P.L. 83-703, "Atomic Energy Act of 1954"

a/ FY 1994 and FY 1995 columns previously funded under "Program Direction" account.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(Tabular dollars in thousands, narrative in whole dollars)

SUMMARY OF CHANGES

Analysis, Education, and Risk Management

FY 1995 Appropriation	$ 84,948
- Adjustment -	0
FY 1995 Adjusted	$ 84,948
- Transfer -	0
FY 1995 Comparable	$ 84,948

Analysis, Education, and Risk Management

- Headquarters - Integrated Risk Management functions transferred from the Technology Development decision unit (+$23,900).

  Increased emphasis in the risk management area (+$8,500).

  Education and Training functions transferred from the Technology Development decision unit (+$14,852).

  Increased requirements for Education and Training activities (+$5,004).

  Grants to Indian Tribes transferred from the Facilities Transition and Management decision unit (+$1,956).

  Provide stakeholder interface and outreach support to strengthen the Public Accountability function (+$28,969).

  Increased support for Information Resource Management, Strategic Planning and Analysis, the EM mailroom, Safeguards and Security, and the EM Advisory Board (+$4,035).

  Program Direction and program support activities transferred from the Technology Development decision unit (+$1,407).

  Additional functions/funding associated with increased FTEs due to the EM reorganization (+$2,204).

  Oversight and Self Assessment Activities transferred to the Compliance and Program Coordination decision unit (-$18,753). . . . . +72,074

FY 1996 CONGRESSIONAL Budget Request	$ 157,022

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
(dollars in thousands)

KEY ACTIVITY SUMMARY

ANALYSIS, EDUCATION, AND RISK MANAGEMENT

I. Preface: Analysis, Education, and Risk Management

This activity provides the Federal staffing resources and associated funding to plan, direct, and manage the Department's Environmental Management (EM) Program. The requested funding for FY 1996 will provide for crosscutting activities which support the overall EM mission. Prior to FY 1996 this was the Program Direction account. Program activities under Analysis, Education, and Risk Management include training and education activities, Integrated Risk Management and an expanded Public Accountability program.

Integrated Risk Management includes conducting applied research and development for risk management. It includes grants for resolving human health, environmental risk, and risk communication issues. Integrated Risk Management program staff will conduct reviews of risk assessment activities and cost estimates at the Department of Energy's environmental sites. Activities supported include preparation of a report to Congress, grants to identify site-by-site risks to human health and the environment, identification of data gaps and uncertainties and methods to reduce them, public participation in risk evaluation and communication, and how to define costs for risk reduction.

Functions for the Office of Public Accountability will include stakeholder advocacy, environmental justice, tribal relations, communications and strategic projects.

II. A. Summary Table: Analysis, Education, and Risk Management

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Headquarters	$ 91,896	$ 84,948	$ 157,022	$ 72,074
Total, Analysis, Education, and Risk Management	$ 91,896	$ 84,948	$ 157,022	$ 72,074

II. B. Laboratory and Facility Funding Table: Analysis, Education, and Risk Management

Washington Headquarters	$ 91,896	$ 84,948	$ 157,022	$ 72,074
Total, Analysis, Education, and Risk Management	$ 91,896	$ 84,948	$ 157,022	$ 72,074

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Analysis, Education, and Risk Management			
Headquarters	Program Direction	Program Direction	Administrative Services
	Funding by Object Class: Personnel Compensation $12,037 Benefits 2,293 Travel 1,150 --- $15,480	$11,851 2,548 1,463 --- $15,862	$14,929 2,956 1,588 --- $19,473
	Provided for salaries, personnel benefits, and travel expenses for 203 FTEs at Headquarters, to manage crosscutting activities, including strategic planning; budget formulation, execution, and justification; financial management; administrative duties; and acquisition. ($15,480)	Provides for salaries, personnel benefits, and travel expenses for 383 FTEs at Headquarters, to manage crosscutting activities, including strategic planning; budget formulation, execution, and justification; administrative duties; oversight and self assessment and acquisition. ($15,862) NOTE: The FY 1995 FTE level includes 187 FTEs associated with the Pilot Program. Some of these FTEs will be redistributed among the various HQ programs.	Will provide salaries, personnel benefits, and travel expenses for 313 FTEs at Headquarters, to manage crosscutting activities, including strategic planning; budget formulation, execution, and justification; administrative duties; integrated risk management activities; and public accountability functions. ($19,473) Will provide for contractual services necessary to accomplish program activities that include overall management, coordination, direction in support of Headquarters staff, including specialized assistance to executive staff. Includes support for Information Resource Management (including the Progress Tracking System); Office of Strategic Planning and Analysis; activities associated with general administrative support and operation of the EM mail room; Office of Financial Management, Office of Safeguards and Security; and the Environmental Management Advisory Board. ($52,793) Education and training activities will include technical training for headquarters and field personnel,

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III. Analysis, Education, and Risk Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Headquarters (Cont'd)			including the Office of Environmental Management's additional 1200 FTEs; the assistance/assessment program for the management & operating contractor training that will improve safety and health training through standardization and reduce the duplication of effort between DOE sites; and a DOE-wide project/program management training program. ($19,856)
	Contractual Services Provided for activities that include overall management, coordination, and direction in support of Headquarters staff, including specialized assistance to executive staff. Will provide for technical studies, logistical support of EM Task Force activities, and education, training and outreach activities to support the communication and dissemination of EM program information. ($28,600)	Contractual Services Provides for contractual awards and tasks necessary to provide support in the form of technical, administrative and logistical support and other specialized assistance to the executive staff and the Office of Planning and Resource Management as well as tasks forces in the Environmental Restoration and Waste Management program's headquarters offices. Contractual activities will cover the specialized technical studies, quality assurance and assessment work as necessary to support EM line organizations, planning support activities, and education, training, and outreach activities to support the communication and dissemination of EM program information. ($25,700)	Contractual Services Included in the Administrative Services line (listed above).
	Oversight and Self Assessment Provided for internal oversight to enhance compliance with environmental, safety, and health laws and regulations for EM. Provides for technical validity and cost effectiveness activities in EM programs, and ensures that operations and maintenance procedures and practices for field activities, within the purview of EM, comply with DOE Orders and accepted industry practices. Develops policies	Oversight and Self Assessment Funding provides for internal oversight to enhance compliance with environmental, safety, and health laws and regulations for EM. Will provide for technical validity and cost effectiveness activities in EM programs, and will ensure that operations and maintenance procedures and practices for field activities, within the purview of EM, comply with DOE Orders and accepted industry	Oversight and Self Assessment Transferred to Compliance and Program Coordination decision unit.

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III. Analysis, Education, and Risk Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Headquarters (Cont'd)	and provides interpretations of requirements. Assesses compliance with applicable environmental, safety, and health laws, monitor both technical and financial program performance, and coordinate with other Federal agencies regarding EM program activities. ($18,246)	practices. Will develop policies and provide interpretations of requirements. Will assess compliance with applicable environmental, safety, and health laws, monitor both technical and financial program performance, and coordinate with other Federal agencies regarding EM program activities. ($18,753)	
	Information Resource Management	Information Resource Management	Information Resource Management
	Provided support for computer related activities (electronic mail, bulletin boards, etc.), telecommunications capabilities, information systems development, end user support, and records management and document control. Activities include a communications initiative which will allow for file transfer and electronic mail capabilities between the Secretary of Energy, the DOE Field Offices, and the Program Secretarial Officer. Other activities include implementation of a "Windows" environment on the Local Area Network in support of the Progress Tracking System, implementation of a Management Information System to track the status and schedule for all information system activities, and implementation of an EM Property Inventory System. ($27,380)	Provides support for computer related activities (electronic mail, bulletin boards, etc.), telecommunications capabilities, information systems development, end user support, and records management and document control. Activities will include a continued support of the EM Corporate Information System with appropriate information and technology; continued hardware/software and communications support; and introduction of new technology. ($23,058)	Included in the Administrative Services line (listed above).
	State and Tribal Government Working Group (STGWG)/Stakeholders' Forum	State and Tribal Government Working Group (STGWG)/ Stakeholders' Forum	State and Tribal Government Working Group (STGWG)/Stakeholders' Forum
	Provided logistical support for STGWG and the Stakeholders Forum, as well as support for attendant public participation activities sponsored by the DOE through consultation and cooperation with STGWG. ($2,190)	Provides logistical support for STGWG and the Stakeholders Forum, as well as support for attendant public participation activities sponsored by the DOE through consultation and cooperation with STGWG, as required by the National Defense Authorization Act for Fiscal Years 1992 and 1993. ($1,575)	Included as part of the Public Accountability program (listed below).

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III. Analysis, Education, and Risk Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Headquarters (Cont'd)	Integrated Risk Management Transferred from the Technology Development Program	Integrated Risk Management Transferred from the Technology Development Program	Integrated Risk Management Will provide financial assistance to the Medical University of South Carolina (MUSC) for biomedical research in dose assessment, reviews of worker health. Issue report on waste classification based on risk. Complete national round table forum on ethics, innovative equity and equation, and issue summary report by MUSC. Publish technical review by medical community of current risk assessment of risk at Department of Energy (DOE) weapons sites, completing final report of Tulane University risk assessment review cooperative agreement, publish a catalog of DOE risk related activities being conducted by EM. Continuation of financial assistance activities and grants initiated in FY 1995. Financial assistance to the National Council of Radiation Protection (NCRP), and coordination of risk assessment efforts of national laboratories. Draft reports on risk based standards for decontamination and decommissioning by NCRP. ($32,400)
	Public Accountability Funded from State and Tribal Government Working Group/Stakeholders' Forum and the EM line organizations.	Public Accountability Funded by the State and Tribal Government Working Group/Stakeholders' Forum and the EM line organizations.	Public Accountability Will provide stakeholder interface and outreach support to the Environmental Management organization. Activities will include grants to Site Specific Advisory Boards, grants and agreements to Native American organizations, review of EM field and program public participation plans, grants to members of State and Tribal Governments to facilitate their effective participation in EM planning; environmental justice/community support grants to local minority and low income communities affected by the EM program;

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III. Analysis, Education, and Risk Management (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Headquarters (Cont'd)			and other activities. ($32,500)
	203.0 FTE $ 91,896	383.0 FTE $ 84,948	313.0 FTE $ 157,022
Analysis, Education, and Risk Management	203.0 FTE $ 91,896	383.0 FTE $ 84,948	313.0 FTE $ 157,022

Uranium Enrichment Decontamination and Decommissioning Fund

Department of Energy
FY 1996 Congressional Budget Request
Budget Authority
(Discretionary Dollars in Millions)

	FY 1994		FY 1995		FY 1996 Request to Congress
	Non-comp	Comp	Non-comp	Comp	
Uranium Enrichment Decontamination and Decommissioning Fund					
Decontamination and decommissioning fund	286.3	286.3	301.3	301.3	288.8
Total, Uranium Enrichment D&D Fund	286.3	286.3	301.3	301.3	288.8

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

Proposed Appropriation Language

Uranium Enrichment Decontamination and Decommissioning Fund

For necessary expenses in carrying out uranium enrichment facility decontamination and decommissioning, remedial actions and other activities of title II of the Atomic Energy Act of 1954 and title X, subtitle A of the Energy Policy Act of 1992, [$301,327,000] $288,807,000 to be derived from the fund, to remain available until expended[: *Provided*, That at least $41,700,000 of amounts derived from the fund for such expenses shall be expended in accordance with title X, subtitle A, of the Energy Policy Act of 1992]: *Provided*, That the Department is authorized to assess a fee on foreign customers of Government enrichment services to offset the full costs of environmental cleanup of the Government's three uranium enrichment plants, which fees shall be deposited in the fund.

EXPLANATION OF CHANGE

This language includes authorization for the Department to assess a fee on foreign uranium enrichment customers and to deposit that fee into the fund, for purposes of cleanup at the uranium enrichment plants. Also, it deletes specific reference to expenditures in accordance with title X, subtitle A, of the Energy Policy Act of 1992.

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND
(Tabular dollars in thousands, narrative in whole dollars)

LEAD TABLE

URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND					
Operating Expenses	$ 286,320	$ 301,327	$ 0	$ 301,327	$ 288,807
TOTAL	$ 286,320	$ 301,327	$ 0	$ 301,327	$ 288,807
Summary					
Operating Expenses	$ 286,320	$ 301,327	$ 0	$ 301,327	$ 288,807
Total Budget Authority Request	$ 286,320	$ 301,327	$ 0	$ 301,327	$ 288,807
Government Contribution to UE D&D Fund (Revenue Offset)	$ -129,805	$ -133,700	$ 0	$ -133,700	$ - 350,000
Net Use of Utilities Receipts	$ 156,515	$ 167,627	$ 0	$ 167,627	$ - 61,193

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL
URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND
(dollars in thousands)

SUMMARY OF CHANGES

FY 1995 Appropriation	$301,327
- Adjustment	0
FY 1995 Adjusted	301,327
Uranium Enrichment Decontamination and Decommissioning (D&D) Fund	
- Asbestos insulation removal at the K-25 Site gaseous diffusion facilities and completion of the Paducah Phase I waste storage facility will be delayed. Conduct, at a reduced level of effort, K-25 projects, including uranium deposit removal from gaseous diffusion equipment, off-site disposal of PCB contaminated electrical components, and off-site disposal of solidified pond sludge	-12,820
- Increase amount available for uranium/thorium reimbursements	+300
FY 1996 Congressional Request	$288,807

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND
(Tabular dollars in thousands, narrative in whole dollars)

FIELD OFFICE FUNDING BY SITE

URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND

Field Offices	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
ALBUQUERQUE OPERATIONS OFFICE					
Albuquerque Operations Office	$ 40,600	$ 41,700	$ 0	$ 41,700	$ 42,000
OAK RIDGE OPERATIONS OFFICE					
Portsmouth Gaseous Diffusion Plant	$ 55,063	$ 64,100	$ 0	$ 64,100	$ 86,072
K-25 Site	114,784	111,116	0	111,116	82,634
Oak Ridge Operations Office	48,496	29,611	0	29,611	22,089
Paducah Gaseous Diffusion Plant	27,377	54,800	0	54,800	56,012
Subtotal, OAK RIDGE OPERATIONS OFFICE	$ 245,720	$ 259,627	$ 0	$ 259,627	$ 246,807
TOTAL	$ 286,320	$ 301,327	$ 0	$ 301,327	$ 288,807

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DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND
(dollars in thousands)

KEY ACTIVITY SUMMARY

URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND

I. Preface: URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND

The Uranium Enrichment Decontamination and Decommissioning (D&D) Fund, established by the Energy Policy Act of 1992, supports D&D, remedial actions, waste management, K-25 landlord requirements, and surveillance and maintenance (S&M) activities associated with pre-existing conditions at the three gaseous diffusion plants owned by the Department of Energy (DOE) and located at Paducah, Kentucky; Portsmouth, Ohio; and Oak Ridge, Tennessee. As required by the Energy Policy Act of 1992, the Department completed a comprehensive environmental audit at the Paducah and Portsmouth sites prior to the lease of facilities at those sites to the United States Enrichment Corporation on July 1, 1993. The audit documented existing and future liabilities attributable to past practices for which the Department retains remediation responsibility. Activities to accomplish this remediation responsibility will be funded by the D&D Fund.

The Energy Policy Act authorizes annual deposits into the D&D Fund of up to $480 million adjusted for inflation. Domestic utilities are to be assessed up to $150 million per year (adjusted for inflation) for 15 years based on their purchase of Department-produced separative work units. The remainder of the annual deposit, currently estimated at $330 million was authorized to come from annual appropriations. The Department will request an appropriation of $350 million ($330 million escalated from October 1992) within the Defense Environmental Restoration and Waste Management Appropriation in FY 1996.

The Department published procedures for the billing of the annual Special Assessment to domestic utilities in an Interim Final Rule on August 2, 1993. In FY 1994, this rulemaking was revised to address subsequent billings, late payment fees, appeals, and wire transfers. In addition, the Department developed documents discussing the project and financial management systems established to control fund formulation, cash management, investments of fund assets, and fund disbursements in support of authorized activities.

The Energy Policy Act (Title X, Subtitle A) also requires the DOE to develop and administer a reimbursement program for active uranium and thorium processing sites defined under Title II of the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978 (Title II sites) which sold uranium and thorium to the United States Government. The purpose of this program is to assist Title II site owners by compensating them on a per-ton basis for the restoration costs of only those tailings resulting from sale of materials to the Federal Government. Each site licensee's maximum reimbursement is based on the short tons of dry tailings on the site attributable to sales of nuclear material to the Federal Government. The Energy Policy Act directed that funding for this reimbursement be taken from the Uranium Enrichment D&D Fund.

The technical criteria for reclamation, decommissioning, and decontamination are set by reference to UMTRCA, the requirements of the Nuclear Regulatory Commission (NRC), and the definitions in Title X of the Energy Policy Act. The NRC or the agreement States currently license the mill sites, have authority over the site, and require reclamation and closure to terminate the license. The DOE will not duplicate NRC or agreement State regulation in this area, but will perform an independent analysis to validate the claims made by licensees for reimbursement to ensure that reimbursement funds are properly distributed according to the intent of Title X.

The Department promulgated regulations in FY 1994 which set forth the reimbursement claim management program, detail the technical evaluation standards for reimbursement, and lay out the method for calculation of the cap on reimbursement for individual sites. The areas of responsibility assigned to DOE under Title X of the Act include development of regulations under which Title II licensees may make claims to the U.S. Government for reimbursement; and review of documentation that established sales of uranium ore to the U.S. Government, including quantities sold and the resulting tailings generated. This determination represents the basis for all claims disbursement to a Title II licensee; review of claimants documentation for reimbursement; and reimbursement of licensees for approved claims.

In response to the Department's commitment to improve management practices and to adopt performance-based budgeting, the Environmental

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II. Facility and Sites Summary (Uranium Enrichment D&D Fund)

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request
K-25 Site, TN	$114,784	$111,116	$ 82,634
Oak Ridge Reservation, TN	9,311	6,814	1,321
Oak Ridge Operations Office, TN	39,185	22,797	20,768
Paducah Gaseous Diffusion Plant, KY	27,377	54,800	56,012
Portsmouth Gaseous Diffusion Plant, OH	55,063	64,100	86,072
Uranium Reimbursement	40,600	41,700	42,000
TOTAL, Uranium Enrichment D&D Fund	$286,320	$301,327	$288,807

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I. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd)

Restoration program has identified performance measures in four major areas: completed characterizations/assessments; completed interim and removal actions and expedited response actions; completed remedial actions; and completed final decommissioning and dismantlement projects. Examples of these measures follow. Completed characterizations/assessments are denoted by a completed key assessment document such as a Record of Decision, Corrective Measures Study, Closure Plan, D&D Plan, Proposed Plan, NEPA Document or No Action decision. Interim/removal actions are any actions resulting in physical cleanup process, reduction of exposure to contaminants or containment of a source term or any action to restrict access to contaminants. Final remedial actions include RCRA closures, RCRA final corrective measures, CERCLA final remedial actions, and completed underground tank programs. D&D final actions are completed when D&D objectives have been met and a report has been submitted for approval. In addition, the program tracks the status of ongoing projects in the four performance areas. The budget request reflects specific details on the outputs which will be accomplished.

II. A. Summary Table: URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	$ Change
Remedial Action				
K-25 Site, TN	$ 36,362	$ 26,295	$ 10,870	$ -15,425
Paducah Gaseous Diffusion Plant, KY	26,553	50,300	50,512	212
Portsmouth Gaseous Diffusion Plant, OH	53,593	61,047	82,827	21,780
Oak Ridge Operations Office, TN	39,185	22,797	20,768	-2,029
Oak Ridge Reservation, TN	9,311	6,814	1,321	-5,493
Subtotal, Remedial Action	$ 165,004	$ 167,253	$ 166,298	$ -955
Decontamination and Decommissioning				
K-25 Site, TN	$ 59,104	$ 74,820	$ 63,324	$ -11,496
Paducah Gaseous Diffusion Plant, KY	824	2,500	1,500	-1,000
Portsmouth Gaseous Diffusion Plant, OH	1,470	3,053	3,245	192
Subtotal, Decontamination and Decommissioning	$ 61,398	$ 80,373	$ 68,069	$ -12,304
Landlord				
K-25 Site, TN	$ 19,318	$ 10,001	$ 8,440	$ -1,561
Subtotal, Landlord	$ 19,318	$ 10,001	$ 8,440	$ -1,561
Compliance Oversight				
Paducah Gaseous Diffusion Plant, KY	$ 0	$ 2,000	$ 4,000	$ 2,000
Subtotal, Compliance Oversight	$ 0	$ 2,000	$ 4,000	$ 2,000
Uranium/Thorium Reimbursement Program	$ 40,600	$ 41,700	$ 42,000	$ 300
Total, URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND	$ 286,320	$ 301,327	$ 288,807	$ -12,520

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II. B. Laboratory and Facility Funding Table: URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	$ Change
K-25 Site	$ 114,784	$ 111,116	$ 82,634	$ -28,482
Oak Ridge Operations Office	48,496	29,611	22,089	-7,522
Paducah Gaseous Diffusion Plant	27,377	54,800	56,012	1,212
Portsmouth Gaseous Diffusion Plant	55,063	64,100	86,072	21,972
All Other	40,600	41,700	42,000	300
Total, URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND	$ 286,320	$ 301,327	$ 288,807	$ -12,520

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CMI	Corrective Measure Implementation
D&D	Decontamination and Decommissioning
DOE	Department of Energy
FFA	Federal Facility Agreement
GCEP	Gaseous Centrifuge Experimental Project
GSA	General Services Area
HSWA	Hazardous Solid Waste Amendments
HVAC	Heating, Ventilation and Air Conditioning
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation & Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
S&M	Surveillance and Maintenance
SWMU	Solid Waste Management Unit
TCE	Trichloroethylene
UMTRCA	Uranium Mill Tailings Radiation Control Act

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III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND			
Remedial Action			
K-25 Site, TN	Continued Phase I and II site characterization; continued Phase I on-site ground water evaluation and sampling of monitoring wells; continued K-1070 OU RI field activities and initiated RI report development; initiated external area RI field activities (K901) and work plan development (K770); completed remedial design and action plans for two surface impoundments (the K-1407 B and C Ponds); continued routine S&M activities; provided program management support.	Continue Phase I and II site characterization; continue Phase I on-site ground water evaluation and monitoring wells analysis; complete K-1070 OU RI field activities; complete external area RI field activities and initiate RI report development (K901); initiate RI field activities; continue routine S&M activities; prepare revisions to the FFA, as required; continue to provide program management support.	Will continue Phase I and II site characterizations; will continue on-site ground water compliance monitoring; will continue RI/FS report and proposed plan development (K-1070 OU); will continue routine S&M activities; will prepare FFA revisions, as required; will continue to provide technical integration support; will complete K770 RI field activities and will initiate RI/FS report development.
	Initiated procurement for remediation of sludge drum waste to put the material in a stable form for delisting as Resource Conservation and Recovery Act (RCRA) waste; continued remediation of a contaminated spring (the K-1070) seep).	Continue procurement for remediation of sludge from drum waste to reach a stable form for delisting as RCRA waste; initiate remedial construction of the K-1407 B and C Ponds; complete remediation of contaminated K-1070 spring.	Will complete procurement and will initiate planning for remediation of sludge drum waste to reach a stable form for delisting as RCRA waste; will complete remedial construction of the K-1407 B and C Ponds; will complete post-construction and verification report of K-1070 spring.
	$ 36,362	$ 26,295	$ 10,870

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Paducah Gaseous Diffusion Plant, KY	Continued S&M, including monitoring of residential wells near contamination areas; continued providing alternative water supply to area residents; continued program management and oversight activities; developed three RI work plans; conducted one RI and developed reports; completed assessment of waste management activities.	Continue S&M, including monitoring of residential wells near contamination areas; continue providing alternative water supply to area residents; continue program management and oversight activities; develop pre-RI work plan; conduct three RIs and prepare RI reports; perform ground water modeling and associated well sampling; continue waste sampling activities. Continue initial TSD maintenance and operations; continue efforts for scrap metal re-use and recycle; continue pursuing treatment technology and studies for land disposal.	Will continue S&M, including monitoring of residential wells near contamination areas; will continue providing alternative water supply to area residents; will continue program management and oversight activities; will conduct two RIs and will prepare RI reports; will continue TSD waste management maintenance and operations; will continue to characterize the accumulated waste for analysis; will continue construction of on-site solid waste landfill.
	Continued development of corrective measures, as required by the Hazardous Solid Waste Amendments (HSWA) permit; continued development of remedial measures for ground water contamination at SWMUs and spill sites which contributed to off-site contamination; completed construction of support laboratory and off-site decontamination pad; completed ER relocation off-site and ER trailer relocation; began construction of pilot pump and treat system and evaluated for containment of off-site contamination; issued feasibility study for ground water contamination containment.	Continue development of corrective measures, as required by the HSWA permit; continue development of remedial measures for ground water contaminaton at SWMUs and spill sites which contribute to off-site contamination; initiate design of additional off-site remedial activity; issue two RODs for containment of NW Plume off-site ground water contamination; conduct characterization of the NE Plume; complete one remedial action; begin construction of the Phase I waste storage facility; complete construction of pilot treatment systems, and evaluate for containment of off-site contamination; continue to ship off-site for disposal.	Will continue development of corrective measures, as required by the HSWA permit; will continue development of remedial measures for ground water contamination at SWMUs and spill sites which contribute to off-site contamination; will initiate remedial activity for containment of NW Plume off-site ground water contamination; will develop feasibility study for NE Plume off-site ground water contamination; will increase off-site waste shipment for disposal; will defer completion of the Phase I waste storage facility construction.
	$ 26,553	$ 50,300	$ 50,512

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Portsmouth Gaseous Diffusion Plant, OH	Continued activities for quadrant specific Corrective Measures Study for Quadrants I, II, III, and IV; completed additional RFI work for quadrants I, II and III; completed RFI activities in quadrant IV; continued work activities on Air RFI and Site-Wide Ecological Risk Assessment; continued RCRA post-closure activities; continued sampling and analysis of ground water monitoring wells; continued National Emissions Standards for Hazardous Air Pollutants (NESHAPS) air monitoring requirements and engineering support of closure activities; continued program management and oversight activities; and initiated development of work plans for Interim Remedial Measures associated with RCE ground water plume; conducted S&M activities; completed assessment of waste management activities.	Continue and complete activities for quadrant specific corrective measures study reports; initiate development of quadrant specific Corrective Measures Implementation (CMI) Work Plans, CMI design, and CMI construction activities for quadrants I, II, III, and IV: complete Air RFI and Site-Wide Ecological Risk Assessment; continue RCRA post-closure activities; continue sampling and analysis of ground water monitoring wells and accumulated wastes; complete NESHAPS air monitoring requirements and engineering support of closure activites; continue program management and oversight activities; and complete development of Interim Remedial Measures Work Plan to stop the migration of TCE ground water plume; continue S&M activities. Continue initial TSD maintenance and operations; continue technology demonstrations and studies for land disposal; perform characterization and treatability studies.	Will receive approval for quadrant specific CMS reports from regulators; will complete quadrant specific CMI program plans and work plans; will continue CMI design and construction activities; will continue RCRA post-closure activities; will continue sampling and analysis of ground water and accumulated wastes; will continue program management; will continue TSD waste management maintenance and operations; will continue S&M activities.
	Continued remediation and closure of RCRA hazardous waste management units/waste oil storage tanks; initiated trichloroethylene (TCE)/mixed soils and sludges in-situ treatment; initiated excavation and removal of underground storage tanks; and continued management/storage of RCRA hazardous wastes prior to treatment.	Complete remediation and closure of RCRA waste oil storage tanks; complete remediation and closure of RCRA hazardous waste management units; continue waste shipment and disposal; continue engineering activities for implementation of corrective measures for SWMUs; complete engineering design for landfill; continue TCE/mixed soils and sludges treatment; complete underground storage tank excavation and removal; initiate remediation of above ground storage tank; and continue management/storage of RCRA hazardous wastes prior to treatment.	Will continue engineering activities for implementation of corrective measures for SWMUs; will continue TCE/mixed soils and sludges treatment; will continue interim remedial measure activities to support compliance with RCRA Corrective Action process; will continue management/storage of RCRA hazardous waste prior to treatment; will increase off-site waste shipment and treatment for disposal; will complete construction of landfill.

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):
Remedial Action (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Portsmouth Gaseous Diffusion Plant, OH (Cont'd)	$ 53,593	$ 61,047	$ 82,827
Oak Ridge Operations Office, TN	Conducted aerial remote sensing survey; provided technical integration support to ER activities. Additional activities funded under Defense Key Activity Summaries section.	Continue to provide support for technical integration; provide oversight to ensure compliance with FFA; conduct other crosscutting efforts required to support growth of Oak Ridge Reservation activities at the various sites and installations. Additional activities are funded under Defense Key Activity Summaries section.	Will continue to provide support for technical integration and contract management; will provide oversight to ensure comliance with FFA; will conduct other crosscutting efforts required to support growth of ORO activities at the various sites and installations. Additional activities are funded under Defense Key Activity Summaries section.
	Continued shipments of solidified pond sludge to an off-site commercial disposal facility.	Continue shipments of solidified pond sludge to an off-site commercial disposal facility.	Will reduce shipments of solidified pond sludge to an off-site commercial disposal facility.
	$ 39,185	$ 22,797	$ 20,768
Oak Ridge Reservation, TN	Completed near-shore sediment characterization report at Watts Bar/ Clinch River, an off-site contaminated area; initiated Phase II Watts Bar/ Clinch River Remedial Investigation (RI) sampling.	Complete RI/FS for Lower Watts Bar; complete Phase II Watts Bar/Clinch River field work and submit RI report.	Will conduct fish sampling program; will conduct ecological assessment and analysis. All other activities will be funded under Defense Key Activity Summaries for the Environmental Restoration Program.
	$ 9,311	$ 6,814	$ 1,321
Subtotal, Remedial Action	$ 165,004	$ 167,253	$ 166,298

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Decontamination and Decommissioning			
K-25 Site, TN	Continued S&M at K-25 facilities; continued hazardous materials management activities to protect on-site personnel; continued gas phase decontamination design activities, polychlorinated biphenyl (PCB) sensor head design, and solicitation of industry technology applicable to D&D activities; continued UF6 cylinder inspection maintenance; continued design for demolition of cooling towers; continued exterior surface radiological characterization of grounds; continued characterization, engineering, scoping; initiated design for demolition projects; continued D&D characterization of cooling tower basins and powerhouse area.	Continue S&M at K-25 facilities; continue hazardous materials management activities to protect on-site personnel; continue gas phase decontamination design activities; continue solicitation and evaluation of industry technology applicable to D&D activities; continue characterization of powerhouse area and cooling tower basins; initiate D&D characterization of powerhouse; continue exterior surface radiological characterization of grounds; continue characterization, engineering, scoping; continue UF6 cylinder inspection maintenance.	Will continue S&M at K-25 facilities; will continue hazardous materials management activities to protect on-site personnel; will continue gas phase decontamination design activities; will continue solicitation and evaluation of industry technology applicable to D&D activities; will continue D&D characterization of powerhouse; will continue exterior surface radiological characterization of grounds; will continue characterization, engineering, and scoping; will continue UF6 cylinder inspection maintenance.
	Continued disposal of capacitors; initiated cooling tower superstructure demolition and deposit removal operations; continued asbestos insulation removal from gaseous diffusion facilities.	Continue disposal of capacitors; conduct cooling tower superstructure and powerhouse area demolition; continue deposit removal operations; continue asbestos insulation removal from gaseous diffusion facilities.	Will reduce disposal of capacitors; will slow down deposit removal operations; will delay asbestos insulation removal from gaseous diffusion facilities.
	$ 59,104	$ 74,820	$ 63,324
Paducah Gaseous Diffusion Plant, KY	Conducted S&M activities in Buildings C-410, C-411, and C-420; developed facility characterization plans for C-340 and C-410.	Continue S&M activities in Building C-410, C-411, and C-420; initiate engineering activity for D&D support facilities; initiate characterization and decontamination of Building C-340.	Will continue S&M activities in Buildings C-410, C-411, and C-420; will continue characterization and decontamination of Building C-340.
	$ 824	$ 2,500	$ 1,500

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):
Decontamination and Decommissioning (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Portsmouth Gaseous Diffusion Plant, OH	Performed Gaseous Centrifuge Enrichment Process (GCEP) caretaker activities such as maintaining sprinkler systems and fire protection, and conducting S&M of facilities, including security maintenance and monitoring; restarted Reportable Excessive Automated Property Systems and General Services Administration (GSA) property disposition activities.	Continue GCEP caretaker activities such as maintaining sprinkler systems and fire protection, and conducting S&M of facilities, including security maintenance and monitoring; continue Reportable Excessive Automated Property Systems and GSA property disposition activities.	Will continue GCEP caretaker activities such as maintaining sprinkler systems and fire protection, and conducting S&M of facilities, including security maintenance and monitoring; will continue Reportable Excessive Automated Property Systems and GSA property disposition activities.
	D&D activities for two facilities were delayed until FY 1999 (result of reprioritization); removal of equipment from five D&D facilities were delayed until FY 1999 (result of reprioritization); continued surveillance and maintenance activities.	Continue surveillance and maintenance activities.	Will continue surveillance and maintenance activities.
	$ 1,470	$ 3,053	$ 3,245
Subtotal, Decontamination and Decommissioning	$ 61,398	$ 80,373	$ 68,069
Landlord			
K-25 Site, TN	Continued support of landlord activities including site infrastructure, utilities, and environment, health and safety programs; completed electrical system upgrades of 2 buildings and initiated planning upgrades on 4 additional buildings; performed the K-25 exterior electrical utility upgrade; initiated heating, ventilation and air conditioning (HVAC) upgrade for 1 building (K-1007); completed HVAC upgrade for K-1039 facility; continued abatement of 2 active facilities; designed and constructed handicap	Continue support of landlord activities including site infrastructure, utilities, environment, health and safety programs; continue inspection of facilities to identify OSHA non-compliances and to correct other worker safety-related deficiencies; continue electrical system upgrades on four additional buildings and HVAC upgrades; initiate planning and construction of K-1401 reroof and K732 substation upgrade; continue Tiger Team corrective action activities; continue performing asbestos insulation removal from active facilities (K-1008A, K-1008D); continue	Will continue support of Landlord activities including site infrastructure utilities, environment, health and safety programs; will continue HVAC and electrical system upgrades and inspection of facilities to identify OSHA non-compliance and to correct other worker safety-related deficiencies; will continue Tiger Team corrective action activities; will continue performing asbestos insulation removal from active facilities; will continue upgrades of facilities for handicap access; will continue converting facilities to non-

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):
Landlord (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
K-25 Site, TN (Cont'd)	access for 1 building (K-1000) (All of the above projects are part of a continuing site-wide program to address Occupational Safety and Health Administration (OSHA) non-compliances); continued K-25 Tiger Team corrective action activities; continued to procure equipment, such as mobile decontamination equipment and analytical lab equipment, and vehicles used to support the remediation of the K-25 site.	upgrades of facilities for handicap access; procure freon recycle/recovery equipment; begin converting facilities to non-chlorofluorocarbon fire suppression and air conditioning systems; continue replacing aged vehicles which are not cost-effective to maintain. Additional activities funded under comparable Defense Key Activity Summaries.	chlorofluorocarbon fire suppression and air conditioning systems; will continue replacing aged vehicles which are not cost-effective to maintain. Additional activities funded under comparable Defense Key Activity Summaries.
	$ 19,318	$ 10,001	$ 8,440
Subtotal, Landlord	$ 19,318	$ 10,001	$ 8,440
Compliance Oversight			
Paducah Gaseous Diffusion Plant, KY	Activities funded under Defense Key Activity Summaries for the Environmental Restoration Program.	Activities formerly funded under Defense Key Activity Summaries for the Environmental Restoration Program. Continue compiling accumulated waste information for analysis under the FFCA at Paducah, Kentucky; continue development of deliverables required under the FFCA at Portsmouth, Ohio.	Will continue compiling accumulated waste information for analysis under the FFCA at Paducah.
	$ 0	$ 2,000	$ 4,000
Subtotal, Compliance Oversight	$ 0	$ 2,000	$ 4,000

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III. URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND (Cont'd):

Program Activity	FY 1994	FY 1995	FY 1996
Uranium/Thorium Reimbursement Program	Provided for initial reimbursement of claims made by active mill site licensees for uranium and thorium remediation expenses, for the portion of their remediation costs for tailings attributed to sales made to the Federal Government.	Provide for continued reimbursement of claims made by active mill site licensees for uranium and thorium remediation expenses, for the portion of their remediation costs for tailings attributed to sales made to the Federal Government.	Will provide for continued reimbursement of claims made by active mill site licensees for uranium and thorium remediation expenses, for the portion of their remediation costs for tailings attributed to sales made to the Federal Government.
	$ 40,600	$ 41,700	$ 42,000
URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING FUND	$ 286,320	$ 301,327	$ 288,807

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URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND
Environmental Restoration
(Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Operative Expense Funded Project Summary

Project Title	Previous Oblig	FY 1994 Approp	FY 1995 Approp	FY 1996 Request	Cost Estimate *
Uranium Enrichment Decontamination and Decommissioning Fund	$ 0	$ 245,720	$ 259,627	$ 246,807	$1,770,832

*Current Cost Estimate reflects estimate through FY 2000 only.

FY 1996 BUDGET REQUEST TO THE CONGRESS

FEDERAL ENERGY REGULATORY COMMISSION

FEBRUARY 1995

Elizabeth A. Moler
Chair

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RESOURCES SUMMARY
($ in Thousands)

	FY 1994 Actual	FY 1995 Appropriation	FY 1996 Request
Program			
Natural Gas and Oil Pipelines	$ 68,941	$ 73,003	$ 67,354
Hydropower	60,951	57,531	49,967
Electric Power	32,398	35,639	34,246
Total Operating Expenses	$ 162,290	$ 166,173	$ 151,567
Application of PY Budget Authority			(15,000)
Offsetting Receipts	162,290	166,173	136,567
Net Expenses	$ 0	$ 0	$ 0

FULL-TIME EQUIVALENTS (FTEs)

	FY 1994 Actual	FY 1995 Authorized	FY 1996 Request
Program			
Natural Gas and Oil Pipelines	664	666	659
Hydropower	450	457	454
Electric Power	320	340	340
Total FTEs	1,434	1,463	1,453

PROPOSED APPROPRIATION LANGUAGE

For necessary expenses of the Federal Energy Regulatory Commission to carry out the provisions of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including services as authorized by 5 U.S.C. 3109, including the hire of passenger motor vehicles; official reception and representation expenses (not to exceed $3,000); [$166,173,000] $136,567,000 to remain available until expended: *Provided*, That [hereafter and] notwithstanding any other provision of law, not to exceed [$166,173,000] $136,537,000 of revenues from fees and annual charges, and other services and collections in fiscal year [1995] 1996, shall be retained and used for necessary expenses in this account, and shall remain available until expended: *Provided further*, That the sum herein appropriated from the General Fund shall be reduced as revenues are received during fiscal year [1995] 1996, so as to result in a final fiscal year [1995] 1996 appropriation from the General Fund estimated at not more than $0.

STATUTORY AUTHORIZATION

The Commission's primary sources of authority are the following statutes: Federal Power Act, Natural Gas Act, Department of Energy Organization Act, Energy Policy Act, Natural Gas Policy Act, Interstate Commerce Act, National Environmental Policy Act, Endangered Species Act, Electric Consumers Protection Act, Energy Security Act, Public Utility Regulatory Policies Act, Public Utility Holding Company Act, Pacific Northwest Electric Power Planning and Conservation Act, Regulatory Fairness Act, and Clean Air Act.

These statutes authorize the Commission to regulate:

- construction and operation of natural gas pipelines;
- interstate sales for resale and transportation of natural gas;
- interstate transportation of crude oil and petroleum products by pipeline;
- construction, operation, and safety of non-Federal hydropower projects;
- interstate sales for resale and transmission of electric energy;
- certification of exempt wholesale generators and qualifying facilities; and
- corporate transactions, mergers, and security issues of electric public utilities.

INTRODUCTION

Total Budget Request
$136.6 Million
1,453 FTEs

The Federal Energy Regulatory Commission's (Commission) total requirement for fiscal year (FY) 1996 is $151,567,000; however, we plan to apply $15,000,000 in budget authority available from prior years, thereby reducing our request to $136,567,000. The total funding will support a staffing level of 1,453 full-time equivalents (FTEs), a reduction of 10 from the FY 1995 FTE level of 1,463.

The funding requirement of $151,567,000 is 9 percent below the FY 1995 appropriation and represents our commitment to the Administration's initiative to reduce government spending, cut administrative overhead costs, and simplify or eliminate unnecessary regulations and other forms of government burden on industry and the public.

We will recover the full cost of our operations through a system of annual charges and fees. The revenue collected will be deposited in the Treasury as a direct offset to our appropriation and result in a net appropriation of $0.

Background

The Commission oversees key parts of the United States energy industries — natural gas pipelines, oil pipelines, electric utilities and other electric generators, and hydropower projects. The Commission's goals remain the same as they have been for many years. We must protect the public and the environment by ensuring that the activities of our regulated entities serve the public interest as required by law.

Today's energy industries are evolving very quickly. In many cases, we can only achieve our goals by modifying our regulatory models or developing new ones that recognize the realities of the 1990s: more competition, more consciousness of environmental issues and a world of commerce that moves much faster. These models can involve:

- **Protecting ratepayers by fully integrating market forces into an overall regulatory model.** We have encouraged the growth of competition in natural gas producing markets and electric power generation. For these policies to succeed, we must continue to develop new models not only for the production sectors but also for transmission of electricity and transportation of natural gas. The goal is to encourage the development of competition where possible in lieu of traditional regulatory methods. Use of a

somewhat more traditional model of regulation will continue to be necessary in noncompetitive sectors of the industries subject to the Commission's jurisdiction.

- **Continuing to improve our protection of the environment.** In regulating hydropower development and natural gas pipeline construction, we must continue to provide opportunities for full public participation, balance all legitimate interests (under many separate statutes), resolve questions quickly, and monitor future performance to ensure that utilities fulfill the terms under which they are allowed to build and operate.

- **Making regulation work better.** We must find ways to analyze new and complex problems, reach fully justified decisions more quickly, and cut the cost of doing regulatory business. This means cutting the expenses parties incur (e.g., unnecessary filings and forms, and litigation costs) in dealing with the regulatory system, making operational and other appropriate statistical data available, and reducing administrative costs at the Commission.

Protecting the Consumer

Competition, where feasible, offers the best consumer protection. The centerpiece of the Commission's strategy for natural gas pipelines, oil pipelines, and electric power is to encourage market forces wherever appropriate. The transition to a fully competitive natural gas wellhead market is now complete. The transition to a competitive electric generation sector is underway.

The experience of the past decade is that competition in these sectors can benefit energy consumers all over the country. In constant dollars, natural gas prices are lower, not higher, than they were 15 years ago. The performance of the gas industry during the winter of 1993-94 suggests strongly that a competitive industry is more flexible and reliable, even under extreme conditions, than the fully regulated systems of just 10 years ago.

Competition in one sector of an industry presents a special challenge to regulators. The fact that gas production or electric generation can be competitive does not mean other sectors of the same industry are also competitive. Both electric transmission and long-haul gas transmission retain substantial aspects of monopoly power, regardless of competition in generation or production. The public needs some form of regulatory protection to guard against abuses of market power in these sectors. However, many traditional regulatory approaches no longer work well. In some cases, they simply do not work in a world of competitive generation or production. In others, they hinder the growth of needed market mechanisms.

The Commission's goal is to find ways to regulate electric utilities and natural gas and oil pipelines effectively in order to protect ratepayers while working with, rather than against, competitive commodity markets.

Natural Gas. Now that Order No. 636 is fully implemented, the natural gas industry faces a more stable future than it has for many years. It also offers customers many more choices than ever before. New options and services, like secondary markets for transportation capacity and market centers, improved electronic communications and metering, along with new approaches to old services, can greatly benefit customers — as is clear from the winter of 1993-94.

The result is a benefit to the public and a challenge to regulators. An industry that is changing rapidly offers a constantly moving target to regulators. Finding a way to protect customers in an increasingly dynamic market is the essence of the Commission's work for the next few years.

During the next few years we will see changes in several key areas:

- **Setting pipeline rates.** Use of straight fixed variable rate design will require less attention to rate design issues. However, the overall cost of transportation service is more critical than ever in many markets. Therefore, the Commission will continue to focus on cost-of-service issues like rate of return and depreciation. Also, future rates will need to reinforce, rather than hinder, the more flexible gas markets that are evolving under Order No. 636. This will require a greater focus on the allocation of costs.

- **The kind and complexity of natural gas pipeline rate filings.** Now that pipelines operate in an Order No. 636 environment, filings will involve issues either deferred or not raised in the restructuring proceedings. These filings will involve revisions to the terms and conditions of transportation and storage services, provisions for new services, and revisions to operating conditions, among others. Many of these filings will present new and complex issues to be resolved, not only on an individual pipeline basis, but also on an industry-wide basis as pipelines compete for business. In addition to handling these filings, we will need to revise filing requirements and develop new methods to monitor pipeline rates and financial filings to ensure pipeline rates continue to be just and reasonable.

- **Increased consideration of potentially competitive transportation services.** While providers of most transportation and distribution services retain market power, some may be competitive. For example, the Commission has already received a substantial number of filings for market-based storage rates. We will need to develop an overall framework, including the criteria that we will apply to all market-based pricing filings.

- **Encouraging further market developments.** As the pipeline industry expands its markets into new areas, such as increased use of natural gas to generate electricity, companies will offer new types of services. These new services may require changes in their tariffs. The Commission will also look at encouraging further development of capacity release programs. Our new and revised models for regulation will need to be more sensitive to industry-wide issues, as well as to company-specific approaches.

- **Integrating new construction into the growing national gas market.** We will continue to seek ways to let companies expand the national grid to provide the best service for customers at the lowest cost. We will more clearly define the rate policies for new construction. We will seek to balance the need to encourage new construction and expand markets with the need to protect existing customers. When pipeline construction is proposed for heavily populated or environmentally sensitive areas, we will seek innovative methods to dovetail the need for more energy with the protection of the environment.

As a result of changes in the natural gas industry from wellhead deregulation and the restructuring of the industry, we implemented a major reorganization within the natural gas and oil pipeline office. Its name was changed from the Office of Pipeline and Producer Regulation to the Office of Pipeline Regulation (OPR) to recognize the end of the producer regulation program. The new divisional structure and staff realignments were necessary due to the virtual end of the purchased gas adjustment filings, the decline in the number of take-or-pay filings, the need for a separate and distinct litigation staff with precise lines of authority, and various other workload adjustments.

As part of the reorganization, we established a separate litigation division within OPR. We anticipate some of the issues now coming to the forefront will result in trial-type hearings before administrative law judges, and OPR staff will actively participate in these cases. For example, the gas supply realignment cost recovery filings that have been set for hearing and will require significant resources in FY 1995.

Further, the former administrative division was disbanded to eliminate duplicate administrative functions. The remainder of that division was incorporated into the new policy and planning division, whose functions include preparing policy papers and initiatives, projecting and improving workload processing, and industry oversight.

The elimination of the producer regulation program has resulted in significant staffing reductions in the natural gas area during the past few years. With the movement of the natural gas industry into the post-Order No. 636 era and the challenges and innovations it will require, the Commission expects to maintain its natural gas staff at nearly current levels.

Oil Pipelines. In the area of oil pipelines, we will continue to implement the revised regulatory scheme mandated by the Energy Policy Act and delineated by the Commission's final rule setting out an optional index-based method for oil pipeline regulation. Also, revised methods for cost-based and market-based ratemaking will be in place in FY 1995 and FY 1996. We expect to receive more rate filings as oil pipelines file to increase their rates, either selectively or across the board. Because the higher number of rate filings will be offset by the new simplified ratemaking processes, staffing levels in the oil pipeline area will remain nearly constant.

Electric Power. The electric power industry will see major changes at an increasing pace over the next few years. The wholesale generation market is becoming more competitive. That, in turn, will introduce many new issues into the regulation of transmission. New generation can be built and operated at a lower cost than facilities already in service. Customers are demanding access to these new, lower cost resources. This, in turn, puts pressure on utilities to lower their overall cost structure. The industry will need to offer wide-spread open-access transmission service in order for consumers to receive the benefits of increased competition in generation. This service will have to be comparable, in terms of both quality and pricing, to the service that transmission owners provide to themselves. We will need to focus sharply on the non-price terms and conditions of access, since they can make a substantial difference in whether competitive generators are able to sell their power. We will also need to address a variety of non-traditional transmission pricing proposals that better accommodate competitive markets.

This change means that regulation of electric power will be more difficult than ever before, and the stakes higher. We will need to do more work, not less, to establish the ground rules for the electric industry's transition into the competitive era. The Commission will need to establish a general framework for its regulation of transmission. We will focus on open access and comparability of service as an overall approach to ensure that transmission services are provided in a nondiscriminatory manner.

Competition in generation will not diminish our workload. Continued construction of new capacity will continue to produce rate filings, for both traditional and non-traditional generators. Also, we will need to oversee an increasing number of power marketers, who act as intermediaries between generators and consumers in this increasingly competitive electric power market.

The number of traditional rate cases is likely to rise. For instance, recent increases in the cost of capital will probably prompt more traditional rate cases to be filed with the Commission as utilities seek to recover higher costs.

Our efforts will increase most in the transmission sector. We will continue to see more requests for transmission to accommodate power sales, and increased open access filings. Further, an increasingly open grid will confront us with many new and complex issues, both in specific cases and in general proceedings. For example:

- How should a company price transmission service? We will need to address the implementation of new and more difficult pricing concepts, such as loop-flow pricing and distance-sensitive rates.

- What quality of transmission service must a company offer its wholesale customers? The touchstone here is comparability — the service must be comparable to the uses the utility

itself is able to make of the transmission system. But such a policy will need to be developed more fully and implemented under a multitude of different circumstances.

- Are new governance mechanisms appropriate for transmission access, pricing and planning? We are encouraging the growth of Regional Transmission Groups (RTGs), where many transmission decisions could be made by a group that includes all the relevant stakeholders. Ultimately, RTGs may produce better decisions with less work from the Commission. However, the Commission will have to do substantial work before reaping any savings — we will need to analyze carefully how much the RTGs' procedures justify giving deference to their decisions.

- What effect will increased competition have on industry structure? We expect many merger applications to be filed during the next few years. As electric markets open, merger-related issues may become more complicated to analyze. We expect to see other corporate restructuring proposals, as well as new power pooling arrangements.

For the reasons discussed above, the Commission expects to maintain, at a minimum, constant resource levels in the electric area. We may even need to increase the use of staff resources.

Protecting the Environment

A major part of the Commission's work in both hydropower licensing and gas pipeline construction is environmental protection. In recent years, environmental issues have become increasingly contentious, and the need for full and early public participation increasingly clear.

The Commission's great challenge in protecting the environment is to reconcile the need for public participation with the need for quicker decisions. No single initiative will reconcile such disparate goals, but a series of initiatives can help substantially. One example is voluntary third-party contracting. Both natural gas pipeline sponsors and hydropower developers can now pay Commission-approved, third-party contractors to conduct environmental reviews. This initiative allows developers to use additional review resources without sacrificing review quality, potentially speeding up the approval process.

We are gaining experience with the third-party contracting option. If companies begin to use it, the prospect is that we could reduce our existing contractor support in future years while fully meeting our responsibilities.

Natural Gas. The Commission conducts environmental analyses of proposed pipeline facilities. In addition to third-party contracting, we are working to improve our environmental reviews in the following ways:

- Continuing contacts with other Federal agencies involved in environmental reviews, for the development of memoranda of agreement. Confusion and delay in environmental review often result from overlapping jurisdictions. Increased cooperation with other agencies can save time and money and result in better decisions.

- Increasing the use of early notification of intent to prepare environmental reviews, to increase public awareness of, and participation in, the review of natural gas construction proposals. This enhances communication and allows more timely resolution of issues.

- Continuing to conduct environmental compliance training for industry applicants and the general public and increasing the use of pre-filing and technical conferences. This streamlines the application process, alleviates problems, and saves time for all involved.

Finally, the Commission will continue the specific efforts noted in last year's budget, such as using clearer environmental guidelines and more field inspections before and during project construction.

Hydropower Licensing. One of the most important jobs for the hydropower program is to balance the Nation's growing energy needs with changing public values about the environment and other beneficial uses of waterways. A key aspect of our work is that we make decisions that affect project operations for the full 30- to 50-year term of the license. This factor carries with it a need for continued compliance monitoring that will come to the fore in FY 1996.

In FY 1996, the recent relicense surge will subside and we will shift our focus toward monitoring compliance with license terms and conditions, while continuing to ensure dam safety. Both of these areas are essential to protecting people, property, and the environment. Monitoring license conditions is critical because it is the only way to ensure that operators continue to adhere to the conditions imposed on projects throughout the life of the project. This is especially important for newly issued relicenses, which have many terms and conditions not imposed in the past. New dam safety initiatives are needed to ensure that dams can withstand potential seismic and flood events — which will continue to protect life, property and the environment.

In addition, we will work to build on earlier initiatives by continuing to:

- ensure that environmental impact statements (EISs) are prepared whenever necessary;

- prepare more multi-project environmental documents;

- review existing licenses for possible amendment proceedings;

- provide means for soliciting public comment;

- promote settlements;
- improve dam safety analyses; and
- improve documentation of how we balance competing claims, including treatment of cumulative impacts and comprehensive development.

Electric Power. The Clean Air Act Amendments created a market-based approach to controlling emissions from fossil-fueled generating plants. As part of its continuing work to find ways to handle the resulting rate issues, in December 1994 the Commission issued a policy statement on the ratemaking treatment for emission allowances in coordination transactions.

Making Regulation Work Better

We are committed to a long-term strategy of improving the quality and lowering the cost of regulation. To do this, we will reduce our own administrative costs, cut the costs the government and the industry incur due to regulation, and make our own work more productive and efficient. We expect to achieve these goals by:

- continuing the shift in emphasis away from traditional routine casework, and toward monitoring and compliance activities;
- increasing the use of alternative dispute resolution (ADR) techniques; and
- finding ways to work smarter and better.

More Monitoring and Compliance. Increasingly, the Commission's approach to regulation will be to monitor the industries it regulates, and act only when there is a clear need to do so. More monitoring will both limit the number of litigated cases and concentrate our efforts on those areas that most need attention. This will lower costs to industry and enhance the value of the Commission's work.

In hydropower, the primary purpose of more monitoring and compliance is to respond to the changing conditions discussed earlier. Given an aging population of dams, for instance, more monitoring is a cost-effective way of continuing to ensure our traditionally high levels of dam safety. For other aspects of the program, monitoring through the life of a project helps ensure that developers live up to their commitments. A hydropower license represents a long-term agreement among many parties. Improved monitoring and compliance are essential if such long-term agreements are to operate properly. In the long run, this approach creates less expense than would correcting problems after they arise.

In natural gas, a major growth in monitoring is likely to occur. More effective monitoring can reduce the number of contested issues in cases. It can give us better information to resolve disputes earlier and to develop flexible mechanisms to nurture a more competitive environment. It also can provide better incentives for companies to act efficiently. The result is to lower the costs of routine litigation and to improve industry performance.

Alternative Dispute Resolution. The Commission has been and remains a pioneer in developing alternatives to lengthy, costly formal hearings. In addition to settling about three-fourths of the public utility and gas pipeline rate cases through negotiation, the Commission has used settlement judges and mediators in its casework. The Commission also adopted ADR procedures for oil pipelines as part of its implementation of the Energy Policy Act of 1992. These procedures have allowed cases to be resolved in months rather than years.

More recently, the Commission has encouraged the growth of RTGs in electric power. These organizations promise to let industry find fair ways to handle many disputes that would otherwise come to the Commission for decision. Setting up and abiding by ADR mechanisms is one of the key aspects of a well-functioning RTG.

This same attention to streamlining dispute resolution applies to environmental areas. With both hydropower licensing and natural gas pipelines, we use pre-filing meetings to identify potential areas of conflict early in the review process. We use later technical conferences and local public meetings to promote understanding and compromise among the parties.

Recently, the Commission has obtained the assistance of the Federal Mediation and Conciliation Service to facilitate a negotiated settlement of one particularly controversial hydroelectric case. The Commission will use this experience as a model for encouraging future efforts to resolve complex cases through facilitated ADR.

The Commission adheres to the principles of the two major Congressional ADR initiatives, the Administrative Dispute Resolution Act of 1990 and the Negotiated Rulemaking Act. For instance, the notice of proposed rulemaking that led to our rule issued in December 1993 establishing standards for natural gas pipelines' electronic bulletin boards was developed by a task force comprising Commission staff and a wide representation of various segments of the natural gas industry. This rule represents a way in which regulatory action can make it easier for everyone in an industry to conduct business, and was developed through a participatory, consensual process.

Additionally, the Commission issued a Notice of Proposed Rulemaking on November 10, 1994, requesting comments on the implementation of ADR procedures in all of the Commission's program areas.

Working Smarter, More Efficiently. The Commission plans to continue to reduce the industries' paperwork. Electronic filing is already in place for many purposes and will be expanded further. As part of our building consolidation, we will develop an electronic infrastructure that encourages more electronic filing and enhances our ability to work directly with electronically filed documents. This will save industry money in its filings and will improve the Commission's work because accessing information will be much easier. As mentioned earlier, we are overhauling our natural gas filing and information requirements. The result will be to streamline the information we collect, to ensure that the information we do collect is relevant and useful, and to allow us to make timelier decisions.

Administrative Cost Reductions. The reduced level of funding requested in this budget reflects one of the Administration's and the Commission's main goals of reducing the cost of government through staffing reductions and administrative cost savings. By the end of FY 1996, we plan to have reduced our administrative support staff by more than 15 percent from the FY 1993 level at an estimated savings of $1.4 million each year.

This budget also reflects estimated savings, when adjusted for inflation, of $1.7 million in other administrative costs as compared to FY 1993. Overall, we estimate that in FY 1996 we will save $3.1 million in administrative costs through staffing reductions — particularly in administrative areas — better management, tighter budget and cost controls, and increased automation. We have accomplished a great deal in the last few years in automating our processes and in developing better communications both internally (through electronic mail) and externally (through electronic bulletin boards, electronic data interchange, and teleconferencing). These savings are highlighted in Appendix A.

Conclusion

We intend to meet our FY 1996 objectives as set out in this budget using fewer resources than in past years. In accord with this goal, we have undertaken a comprehensive examination of our budget process and made changes in our internal budget planning and cost projections. We targeted funding levels for all programs and accounts at nearly $15 million below our fiscal years 1994 and 1995 appropriations for a total FY 1996 requirement of $151,567,000.

Then we went further. Improved management efficiencies gained through revised regulatory processes, enhanced automation capabilities, and proactive measures to reduce administrative staffing levels and expenses have contributed to reduced spending in fiscal years 1993 and 1994 — and we plan to carry this reduced spending into FY 1995, creating additional savings. As a result of these savings, we plan to apply $15 million of prior year unexpended budget authority to our FY 1996 requirement *thus reducing our total budget request to $136,567,000.*

We intend to apply remaining savings of $16 million — the estimated balance of prior year unexpended budget authority — to decrease our next two budget requests, with the objective of eliminating the entire prior-year balance over that period. When this objective is achieved, our budget requests once again will be representative of full Commission requirements for the pertinent fiscal year.

Our FY 1996 request of 1,453 FTEs and $136,567,000 — along with the use of $15 million in prior year unexpended budget authority — will provide the Commission the necessary resources to accomplish the following goals:

- continue the move toward an open-access, market-based energy industry, with particular emphasis on new policy initiatives for electricity regulation;
- address the complex issues, such as capacity release and electronic bulletin boards, arising from restructuring of the natural gas industry;
- develop policies and criteria to apply to market-based and other non-traditional rate filings, such as incentive rate proposals;
- focus more attention on generic monitoring and oversight;
- complete the last of the large volume of hydropower relicensing workload and shift resources to meet increases in hydropower compliance and dam safety workload;
- improve efficiency in natural gas pipeline certificate processes;
- continue to expand the scope of our outreach program for better public and industry awareness; and
- improve overall efficiency and productivity with reduced paperwork and enhanced automation capabilities.

SUMMARY OF TOTAL WORKLOAD

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Natural Gas and Oil Pipelines	11,497	10,944	4,334
Hydropower	5,933	5,943	6,181
Electric Power	2,844	2,272	2,247
TOTAL	20,274	19,159	12,762

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Natural Gas and Oil Pipelines	11,752	11,211	4,522
Hydropower	5,888	5,931	6,185
Electric Power	2,485	2,566	2,244
TOTAL	20,125	19,708	12,951

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Natural Gas and Oil Pipelines	1,777	1,522	1,255	1,067
Hydropower	1,923	1,968	1,980	1,976
Electric Power	667	1,026	732	735
TOTAL	4,367	4,516	3,967	3,778

Note: Detailed workload tables by program are shown in Appendices C-E.

NATURAL GAS AND OIL PIPELINES

Operating Expenses

($ in Thousands)

	FY 1994 Actual	FY 1995 Appropriation	FY 1996 Request
FUNDING	$68,941	$73,003	$67,354
FTEs	664	666	659

Overview

In the natural gas and oil pipelines program, we analyze and act on filings involving the following requests, issues, and concerns:

- proposals for market-based rates and other non-traditional rate filings, such as incentive rate proposals;
- proposals to authorize transportation, storage, or exchange of natural gas services;
- requests to construct and operate facilities used in the provision of such services;
- the siting and construction of proposed facilities for the import or export of natural gas;
- the environmental impact of and the need for the proposed service or facility;
- requests to abandon services and/or facilities used to provide the services;
- proposals for initial rates for service;
- proposed changes in existing rates — comprising full rate cases involving all elements and costs of providing service — and limited rate cases involving only certain costs and services;

- tracking or flowthrough filings pursuant to pipelines' tariffs passing through specific constantly changing costs;
- proposals for new tracking or flowthrough authority;
- tariff provision changes to adjust terms and conditions of the services provided; and
- general oil tariff and rate change filings.

FY 1994 and FY 1995 Achievements

Our most important achievement of FY 1994 was completing the initial Order No. 636 restructuring plans of 76 interstate pipelines, and overseeing the implementation of the Order No. 636 requirements that became fully effective in the winter of 1993-94. In spite of the significant change in the business of natural gas pipelines from that of gas merchants to that of transporters of gas, and the subsequent opening of gas markets to market forces, the transition into the post-Order No. 636 environment went extremely well. The unusually cold and icy winter in many gas market areas provided an important test of the reliability of the restructured industry, with highly successful results.

In the pipeline rates area, we also:

- acted on 20 general NGA section 4 gas rate applications;
- approved 24 full or partial settlements of gas rate cases that had proceeded into litigation before the administrative law judges, resulting in the completion of 80 outstanding dockets;
- issued 20 Commission opinions on initial decisions by administrative law judges;
- acted on 1,112 limited NGA section 4 gas rate filings, composed mostly of filings to recover remaining take-or-pay costs, transition costs related to the implementation of Order No. 636, including Account No. 191 close-out direct bills, gas supply realignment costs, and costs associated with unneeded upstream capacity, cost-tracking filings, tariff language changes, plus all associated compliance filings; and
- approved the first three settlements filed by pipelines to completely resolve their gas supply realignment costs resulting from restructuring under Order No. 636.

In addition, we established specific guidelines and procedures on the eligibility and prudence of costs to be recovered as gas supply realignment costs resulting from the implementation of Order

No. 636; we held public conferences on pricing differential cost mechanisms for gas supply realignment costs associated with gas supply contracts not yet bought out or reformed, and on rate policies for costs related to new pipeline construction.

We issued Electronic Data Interchange standards for downloading capacity release information from gas pipeline's electronic bulletin boards as a result of a cooperative effort with the industry to develop the standards and the time frames for implementation. We also issued notices of proposed rulemaking to revise and update the Commission's filing requirements for gas and oil rate filings as well as the reporting and forms filings requirements.

We issued a final rule revising the standards of conduct and the associated reporting requirements related to transportation and marketing affiliates of gas pipelines. This significantly reduces the pipelines' reporting burden while maintaining oversight ability by requiring either (1) electronic bulletin board postings of crucial information that allows potential violations to be recognized or (2) the maintenance of logs for review by the Commission and interested parties.

In the pipeline certificates area, we:

- approved 42 gas pipeline construction projects costing over $1 million each, involving over 493 miles of gas pipeline, 53,400 horsepower of compression, 2.3 billion cubic feet of capacity per day, and $570 million in potential investment;
- issued nine preliminary determinations — orders giving an applicant early guidance on the nonenvironmental aspects of its gas pipeline construction proposal;
- completed almost 300 prior notice filings for gas pipelines;
- completed 90 environmental assessments and 1 environmental impact statement for gas pipeline construction; and
- approved six market-based rate proposals for storage.

To provide an additional resource for meeting our environmental responsibility and eventually to speed the certificate process, we initiated third-party contracting for environmental documents. We also allow applicants to prepare environmental assessments themselves, which they may file with the applications to speed the review process.

As a result of Order No. 636, interstate natural gas pipelines were required to unbundle their sales from their transportation services. Generally, pipelines included the cost of gathering gas through their facilities, from the wellhead to the mainline, in their overall sales rate. With unbundling, pipelines were required to separately state their gathering rates to prevent shipper subsidization of the merchant function. Due to a number of contested cases where pipelines

proposed to transfer or refunctionalize gathering facilities, we initiated a proceeding to reexamine our policy for determining whether facilities perform a gathering or transmission function.

On May 27, 1994, we issued a series of orders addressing various issues raised in the gathering proceedings and, in general, clarifying our gathering policy. In the proceedings, we established and applied clear policies to define what types of gas facilities are nonjurisdictional gathering facilities. We decided how pipelines must treat gains and losses from the sale or disposition of formerly certificated and regulated gathering facilities. We also provided a mechanism to ensure that existing shippers are protected during the transition from Commission regulation of gathering facilities to their nonjurisdictional status. Since the end of May, we have issued orders in 23 gathering cases.

In the oil pipeline area, we:

- authorized 184 oil pipeline rate changes;
- approved 5 full or partial settlements of oil rate cases that had proceeded into litigation before the administrative law judges, thereby completing 54 outstanding dockets;
- issued Commission opinions on the Trans Alaska Pipeline System (TAPS) pumpability and quality bank cases, thereby completing 74 litigated oil cases and 110 outstanding oil tariff filings; and
- issued Commission opinions on 3 non-TAPS oil hearing initial decisions, thus completing 24 litigated oil pipeline dockets.

We issued a final rule on an index-based streamlined method for oil pipeline regulation and for changes to the Commission's administrative procedures as required by the Energy Policy Act. With the rule, we initiated inquiries on cost-of-service ratemaking, annual reporting requirements, and market-based ratemaking as alternative methods to the index ratemaking method where that method may not be appropriate in particular limited circumstances. We finalized those inquiries with final rules that took effect on January 1, 1995, with the indexing methodology.

In addition, we resolved 14 appeals of Department of Energy remedial orders concerning its oil price regulation program.

To close out our producer program, we completed the review of the 8,110 well determination filings submitted by jurisdictional agencies by our May 2, 1994, deadline. With the completion of the review of the well determination filings, the producer program has been terminated.

In the first quarter of FY 1995, we:

- held a public conference on the issue of whether the cost of new pipeline construction should be rolled in with the costs of the current facilities or incrementally charged to only those customers who will use the new facilities;
- conducted customer outreach meetings to address the need for changes or expansion of the electronic bulletin board data and its use for analyzing the operation of the capacity release market;
- issued a notice of proposed rulemaking to revise and update the oil and gas filing and reporting requirements, as well as the forms requirements, including a comprehensive review of the need for and use of information currently being collected and other data requirements for implementing regulatory schemes; and
- issued an order on rehearing on an index method for oil pipeline regulation and issued final orders on the cost-of-service and market-based proposals for oil pipelines.

FY 1995 and FY 1996 Program Issues

Post-Order No. 636 Implementation Efforts. In this area we will:

- continue to process rate change applications that interstate pipelines will file to recover restructuring transition costs and to address cost-of-service and rate issues either deferred in or resulting from the restructuring proceedings, most of which will involve formal hearings before administrative law judges;
- monitor industry performance under Order No. 636, including the review of conditions imposed on such services as storage, operational balancing agreements, upstream capacity retention, bidding under the right of first refusal, and other issues raised in petitions or complaints before the Commission;
- continue to develop policies and criteria to apply to market-based and other non-traditional rate filings, such as incentive rate proposals;
- continue to refine and develop initiatives begun under Order No. 636 such as the development of market hubs and the new types of services that pipelines are offering;
- evaluate the effectiveness of the pricing differential methodology in minimizing gas supply realignment transition costs;

- analyze the information filed under the Electronic Data Interchange standards for the electronic bulletin boards; and

- consider whether to refine the environmental filing requirements for gas pipeline construction projects, revise self-implementing environmental procedures, and codify environmental review activities.

Improving Existing Approaches. To carry out our statutory responsibilities more effectively, we will:

- continue our efforts to reduce case processing times for both construction certificate and rate change applications;

- refine our consumer outreach program to improve public awareness of pipeline construction proceedings;

- continue conducting industry seminars on environmental compliance and cultural resource requirements;

- examine issues and applications relating to the production area, incentive rates, and the certificate process, including environmental analysis;

- use alternative dispute resolution to encourage settlements in gas and oil pipeline rate cases; and

- encourage third-party contracting for environmental documents, which will allow Commission-approved third-party contractors to conduct environmental reviews.

General Rate Issues

Although regulatory methods and the basic service structure of the pipeline industry have changed under Order No. 636, we are still responsible for rate review under the Natural Gas Act. To regulate effectively in the new environment of restructured services, we are undertaking a review of our rate regulations, reporting requirements, and methods of evaluating rate proposals with a view to eliminating duplicative and outdated requirements and providing information needed to carry out our regulatory responsibilities in the restructured environment.

Order No. 636 proceedings caused pipelines to postpone many general rate change proposals that they normally would have filed in FY 1992 and FY 1993. We have received many of the postponed rate changes during FY 1994, and many of those cases are expected to continue into FY 1996.

Many of the rate case filings will involve issues which the Commission deferred during restructuring for consideration in pending or future rate cases, including:

- cost allocation;
- rates of return and depreciation;
- transportation zones and mileage-based rates;
- market centers;
- treatment of storage costs;
- production area rates;
- pipeline tariff terms and conditions and their standardization;
- impact of capacity release on interruptible throughput projections;
- eligibility and prudence of transition costs for recovery under Order No. 636;
- effects of discounting on recovery of pipelines' costs;
- market-based and other non-traditional cost rate proposals, such as incentive rates; and
- undue discrimination.

We expect to receive more complex filings involving issues not raised in the Order No. 636 compliance proceedings. In addition to traditional cost-of-service and rate issues, these filings will involve operational issues, revisions to previously authorized services, and other refinements resulting from experience under Order No. 636. We expect that these cases will be more difficult to resolve because of the new issues presented and lack of precedent available on which to base decisions.

As pipelines gain experience in the post-Order No. 636 environment, they will refine and modify the terms and conditions of their transportation and storage services. They must do so to remain current with the operational requirements of the markets they serve. Competition will cause downstream pipelines and competing transporters to make proposals and filings to compete on an even basis.

We will develop new methods to monitor pipeline rates and financial information filings to ensure that the last-approved rates continue to be just and reasonable.

We also expect a number of complaints that the Commission will investigate concerning pipeline operations under the requirements of Order No. 636.

In the post-Order No. 636 environment, pipelines will submit tariff filings in compliance with settlements and regulations. These filings will require more intensive interpretative analysis plus knowledge of industry operations, precedents, and related cases. Staff must ensure that companies are complying with Commission orders.

The post-Order No. 636 environment is expected to reduce the number of limited NGA section 4 filings due mainly to the termination of the purchased gas adjustment filings. However, a variety of new and potentially controversial miscellaneous and tracking proposals is expected to more than offset this reduction. Many of the new tracking proposals will be unique and require case-specific analysis and policy determinations. Many of the proposals will be contested and will require, at the least, technical conference proceedings.

Fuel-use tracking filings will increase under the new environment so pipelines can assess transportation costs to the appropriate parties. Tracking filings to recover third-party pipeline transportation charges may decrease slightly as pipelines are able to shed unwanted upstream capacity.

Pipelines will continue to file limited NGA section 4 cases for the recovery of transition costs. Further, as the proceedings that have been set for formal hearing are completed, the resolution of the issues that are currently being litigated will have to be applied to these filings. To the extent new issues arise, policy will either have to be developed or further issues added to the ongoing formal proceedings. A number of pipelines have already settled their transition cost or gas supply realignment cost proceedings. The Commission will do what it can to encourage additional voluntary settlements of these contentious proceedings.

While the Commission has resolved the majority of the outstanding Order Nos. 500 and 528 proceedings relating to take-or-pay, a few cases remain to be resolved. We will attempt to decide these cases and continue to process filings that pipelines are still making for interest reconciliation. Pipelines are filing for new costs on an infrequent basis.

Pipelines may propose other tracking filings for specific costs that may not warrant the scrutiny, time, and expense of a full NGA section 4 rate case review. We will review these filings for their appropriateness under a limited section 4 recovery procedure. We will also review subsequent cost-recovery filings for conformity with the authorized cost-recovery mechanism.

Finally, we will continue to make determinations of market competitiveness of oil pipelines on a case-by-case basis and, where appropriate, permit light-handed regulation.

Certificates

With the issuance of Order No. 636, the certificate process has continued the shift from case-specific authority to blanket authorizations covering services (sales and transportation including storage) and certain construction, abandonment, and miscellaneous activities. The blanket authority permits the certificate holder to install limited facilities and offer services without case-specific review by the Commission subject to specific reporting requirements, thus expediting the initiation of service. This process generates various compliance filings which permit the Commission to monitor this activity.

Certain noncontested pipeline construction activity can be undertaken either through prior notification to the Commission or on a self-implementing basis under the provisions of a blanket certificate which is subject to cost limits and specific reporting requirements. However, major construction activity to provide new or additional service requires case-specific authorization. This enables the Commission to address various environmental and nonenvironmental certificate issues. The Commission will continue its efforts to expedite the processing of case-specific certificate applications by identifying necessary regulation changes. It will also review the blanket certificate and delegation programs to cover additional construction activity. The certificate regulations may be further revised to reflect the change in the industry from a primarily merchant function to open-access transportation.

The bulk of the case-specific certificate activity involves the construction of facilities to provide increased transportation and storage-related services and to effect the import/export of gas. These cases are often contested, and they raise complex issues requiring a multidisciplinary staff to process.

During FY 1996, we will continue our enhanced public information program on the pipeline construction environmental review process, which includes:

- local pre-construction notification by issuing notices of intent to prepare environmental documents;
- public notification of environmental scoping meetings on proposed projects;
- public notification of pre-construction site inspections on controversial projects conducted by the Commission staff and cooperating Federal and state agencies; and
- outreach programs to inform the industry and public of our environmental policies.

Public awareness of construction projects has increased the concerns raised by individuals and local governments affected by the placement of facilities, construction methods, and right-of-way

restoration. To address these concerns, we continue to work on ways to enhance our communication with affected parties and intensify our on-site construction inspection program. Early identification of these concerns, particularly environmental, translates into a reduction in the overall certificate processing time.

We will also continue to update and streamline our nonenvironmental review process for pipeline construction and operation certificates. This will give pipelines the ability to respond quickly to competitive market conditions. In FY 1996, we will continue to:

- ensure that proposals are complete and include market support before processing begins;
- convene technical conferences, when necessary, soon after the comment period expires;
- schedule most preliminary determinations on new construction projects for disposition within 120 days after receipt of a complete application;
- address policy issues to provide regulatory certainty on a generic basis;
- expedite our review process to meet proposed in-service dates while observing due process and all applicable environmental laws;
- review certificate regulations to identify improvements to the Commission's certificate analysis procedures; and
- develop procedures to assist new entrants in the natural gas market.

Compliance/Oversight

Post-Certificate Conditions. These activities reflect our increased concern with environmental monitoring and compliance after certificate issuance. We will conduct both in-house reviews of required filings (paper compliance) and site inspections (field audits and on-site inspections).

We approve construction applications subject to certain conditions. Environmental assessments include, on average, more than 10 conditions, and environmental impact statements include, on average, nearly 50 conditions (although they may include many more).

We conduct compliance site inspections during and after construction of a certificated pipeline project, sometimes with other Federal, state, and local agencies. Site inspections require:

- conducting field reviews on most pipeline projects greater than two miles in length and on pipelines or above-ground facilities in environmentally sensitive areas; and

- scheduling inspections during construction to monitor compliance with construction conditions and after construction to monitor restoration.

We document each site inspection with photographs and a detailed report of activities and findings. For larger projects, we use aerial inspection over the entire route followed by a ground inspection of problematic areas. When the inspection reveals noncompliance, such as damage to a resource or failure to adhere to the required construction or restoration procedures, we require the company to bring its project into compliance. Repeated or serious noncompliance may require stop-work orders or enforcement action.

Pipeline Safety. The March 23, 1994, explosion of a Texas Eastern pipeline in Edison, New Jersey, highlighted the need for Federal, state, and local officials to ensure that every reasonable effort is taken to ensure the safety and integrity of the Nation's natural gas pipeline and distribution facilities. The Department of Transportation (DOT) has the statutory responsibility to ensure that pipelines are safe. The Commission will continue its efforts to work cooperatively with DOT to enhance the pipeline safety program. The Commission has also supported enactment of legislation to provide a comprehensive nationwide "one call" program. The legislation is pending before the Congress.

LNG Operational Safety Inspections. We conduct LNG plant safety inspections in accordance with NGPA section 303, which requires the assurance of a plant's operational reliability. We conduct these inspections on a biennial basis, so we can inspect all 15 jurisdictional facilities every 2 years.

NGPA Section 311 Construction and Section 2.55 Replacements. These notices and reports are environmental monitoring and compliance filings required by Commission Order No. 544. Review of these notices and reports enables us to ensure that pipelines comply with all environmental requirements and to take follow-up action as required.

- Section 2.55 Replacement Filings Exceeding Cost Limits: Jurisdictional companies replacing natural gas facilities under 18 CFR 2.55 (b) must notify the Commission at least 30 days prior to commencing construction if the cost of the project exceeds a specified cost limit ($6.6 million in 1994).

- Section 311 Construction Filings Exceeding Cost Limits: Pipelines contemplating construction activity related to NGPA section 311 transportation must provide similar notice if the project exceeds the cost limit.

For those projects that are exempt from the advance notice requirement, we require the filing of an annual report containing the same information required for an advance notification.

Blanket Annual Reports. This category covers environmental monitoring of compliance by those projects automatically authorized under blanket certificate authority and reporting annually under 18 CFR 157.207. These reports, among other things, allow the Commission to verify that pipelines are complying on their own with standard environmental conditions and keep the Commission informed on projects not subject to the prior notice requirement.

Refunds. When pipeline companies file proposed rate changes, they are usually accepted by the Commission, subject to refund. The Commission may order refunds at the end of the proceedings that determine the appropriate final rate. We review the refund reports to determine if the appropriate parties have received refunds, and if the amounts of the refunds have been correctly computed. We expect a slight increase in the number of refunds for FY 1995 and FY 1996 because of the higher volume of rate cases filed in FY 1994 and expected in FY 1995.

Electronic Bulletin Boards. Effective June 1, 1994, pipelines were required to make capacity release information available through standard downloadable datasets in Electronic Data Interchange (EDI) format. We developed an automated database and retrieval system to report on and analyze this downloaded information on a regular basis. Using this automated information, we perform industry-wide compliance and oversight activities involving the existing capacity release process, focusing on such things as the bidding process, comparison of offers and awards, and pipeline segment-level analysis of capacity release. As the use of EDI expands into other areas such as nominations, confirmations, and operational data, we will be able to monitor the pipeline industry on-line without requiring large reports to be physically filed with the Commission.

Annual Form No. 2 and Form No. 11 Filings Review. We will revamp the filing and reporting requirements on these forms. The changes in the information reported will enhance our ability to review pipeline costs and revenues and assess pipelines' performance.

Accounting and Financial Reporting

An essential element in the Commission's rate program is the existence of reliable financial accounting information based on sound accounting principles applied to all jurisdictional companies. The Commission uses the accounting information to:

- establish just and reasonable rates under sections 4 and 5 of the NGA;
- measure historic economic performance;
- assess compliance with the terms of accepted tariffs;

- determine the adequacy of current rates; and
- construct ratemaking models for the development of future rates.

The Commission must use sound and reliable financial information in its economic regulation. A program of financial audits assures the reliability of this data. The Commission audits about 60 percent of the 130 jurisdictional natural gas pipelines every 4 years. It audits the other companies more or less frequently, depending on factors such as the use of automatic mechanisms and the frequency of rate filings.

In addition to assuring that financial information is reliable and uniform, the audits assist the Commission in such diverse areas as:

- evaluating the overall health of the natural gas industry;
- determining the financial performance of specific companies;
- determining potential or actual discrimination by jurisdictional companies in price and quality of service;
- testing the accuracy of information on electronic bulletin boards mandated by the Commission and operated by jurisdictional gas pipeline companies;
- reviewing information needed to monitor incentive rates and rate subsidies properly;
- testing for discriminatory transactions between jurisdictional companies and their affiliates; and
- ensuring that pipelines comply with the terms and conditions of their approved tariffs and certificate requirements.

Similarly, we administer the Uniform System of Accounts for jurisdictional oil pipelines. We audit the books and records of the Trans Alaska Pipeline System and its owners on a cyclical basis; we audit all other oil pipelines on an as-needed basis.

Summary of Natural Gas and Oil Pipelines Workload and Resource Needs

Natural Gas. With the completion of the implementation of restructuring, pipelines will no longer be making Order No. 636 filings. Also, as a result of the revisions to our filing and reporting requirements, we expect to terminate the transportation transactions filings. These

decreases, along with decreases in the limited NGA section 4 filings, due to the elimination of the purchased gas adjustments, will be slightly offset by an increase in other filings resulting from pipelines' experience under Order No. 636. While the number of transportation transactions we will complete is large, they will require minimal staff to review and process. In contrast, we expect the other filings, resulting from pipelines' experience under Order No. 636, to be very complex, requiring in-depth review and analysis, thereby requiring significant staffing resources.

Certificate work will remain steady through FY 1996. Small decreases in the abandonment filings will be offset by similar increases in non-formal certificate work, particularly new storage projects, Subpart F Blanket Annual Reports, and Declaratory Orders. We anticipate that although workload will remain steady, we will devote increased staff time and resources to environmental work, including reviews of proposed projects and post-completion compliance.

We expect increased workload in refinements to concepts initiated by restructuring as the industry completes its move toward full implementation of Order No. 636. As we complete these refinement filings, we anticipate our workload shifting toward monitoring and oversight activities. These workload trends will evolve as both the industry and the Commission evaluate the effects and the impacts of restructuring over the next few years.

Oil Pipelines. In FY 1996, we will be in the second full year of the revised regulatory scheme applicable to the regulation of the oil pipelines. The Energy Policy Act required that we streamline our ratemaking methodology and simplify our filing requirements. However, as we implement these measures, we expect some companies to file to increase their rates either selectively or across the board as allowed under the new rule. These filings are reflected in the general tariff and rate increase categories, respectively. We anticipate that the workload growth in these categories will lead to more litigated cases as these filings present issues to be resolved in formal hearings.

[See Appendix C for natural gas and oil pipelines workload tables.]

HYDROPOWER

Operating Expenses

($ in Thousands)

	FY 1994 Actual	FY 1995 Appropriation	FY 1996 Request
FUNDING	$60,951	$57,531	$49,967
FTEs	450	457	454

Overview

Hydropower is a domestic, renewable resource that offers an abundant, clean source of electric energy. The 1,624 hydropower projects we regulate represent about half the Nation's hydropower energy generation. Overall, hydropower supplies about 10 percent of America's electric energy and makes up 96 percent of our total renewable energy production. This production is about 282 billion kilowatt-hours of energy — equivalent to almost 482 million barrels of oil per year. To the degree that this amount of oil saved would have to come from foreign sources, hydropower contributes to national security and advances the goal of energy self-sufficiency. Hydropower also makes a significant environmental contribution: it prevents the discharge of 6.2 billion tons of particulates into the atmosphere annually.

The Commission regulates non-Federal hydropower for the benefit of the public, considering all resources and beneficial uses of the Nation's waterways. We respond to our stakeholders' interests and to the changing role of hydropower in the Nation's energy future. We will continue to evaluate the need for new capacity development and increased efficiency at existing hydropower projects, while keeping in mind environmental requirements. In doing so, we will focus on:

- encouraging and ensuring comprehensive, multipurpose uses of the Nation's water resources, including environmental protection, mitigation, and enhancement;
- reducing regulatory delay and eliminating as much uncertainty as possible for water-resource developers;

- ensuring compliance with all Commission authorizations and applicable environmental laws;
- encouraging and ensuring efficient, integrated operations at all licensed and exempted projects;
- encouraging public participation and input in our licensing program;
- following licensing and relicensing processes that consider the concerns of other Federal agencies, state governments, and the public;
- carrying out a dam safety inspection program to ensure that the aging population of dams meets rigorous safety requirements and current dam safety standards;
- requiring full tests of emergency action plans (EAPs); and
- providing guidance to the hydropower community to help identify and reduce the occurrence of common compliance problems.

We will continue to look for ways to facilitate our review and decision-making on water resource projects. At the same time, we will continue to consider and protect environmental and other values. This will ensure that projects are developed and operated in the public interest. Among our highest priorities are initiatives to:

- continue to develop additional hydropower capacity through project upgrades;
- utilize the third-party contracting option that allows project developers to present us with more complete applications, thus enabling quicker action on those applications; and
- pursue cooperative working relationships with Federal and state agencies.

Many benefits are derived from water resource development. Part I of the Federal Power Act (FPA) requires that we analyze hydropower development in a broad context, because water resource development represents one of the most important elements of the country's infrastructure. Some of the major uses for the projects we regulate are power production, water supply, irrigation, flood control, navigation, fisheries, wildlife, and recreation.

Environmental Analysis

Statutory Requirements. Several Federal statutes mandate that we consider and mitigate environmental impacts of hydropower projects — primarily the National Environmental Policy Act (NEPA) and the FPA, as modified by the Electric Consumers Protection Act (ECPA).

To meet this requirement, we prepare environmental assessments (EAs) and environmental impact statements (EISs) or supervise their preparation by contractors. To ensure that we examine all important environmental issues, we go through a public scoping process for all license applications. During document preparation, we receive comments from other agencies and interested parties on a proposal. We issue EAs for comment in all licensing cases. In addition, EISs usually include field inspections, public meetings, and technical sessions. Both EAs and EISs become part of the record the Commission uses to decide whether to approve or deny license and exemption applications.

Under ECPA amendments to the FPA, we must build a record that includes analyses of proposed projects' consistency with comprehensive plans prepared by Federal or state agencies. To date, approximately 650 plans have been filed, and Federal and state planning and resource agencies continue to file additional plans. In analyzing these plans, we must determine how the proposed project will affect the resources discussed in the plans. We must often negotiate with fish and wildlife agencies when agency recommendations on mitigation, protection and enhancement are inconsistent with applicable law.

Under the Endangered Species Act, the Commission must ensure that licensed and exempted projects do not jeopardize the continued existence of endangered or threatened species or destroy or adversely modify critical habitat. With over 600 species now listed, and over 400 new species expected to be listed in the next 3 years, potential conflicts at proposed, licensed and exempted projects are expected to increase dramatically. Endangered species issues commonly require extensive analysis, as well as consultation with resource agencies, before reaching a satisfactory resolution.

The Supreme Court's recent decision in *PUD No. 1 of Jefferson County v. Washington Department of Ecology* broadly construed the ability of the states to impose conditions, pursuant to section 401 of the Clean Water Act, on hydropower licenses. Although this case may have some future impact on the level of resources devoted by the Commission to hydropower licensing, we cannot currently predict what that impact will be.

Environmental Review Process. We independently analyze likely environmental effects of proposed hydropower development and proposed changes to existing projects. This serves as a basis for our decision on whether or not the proposed project is a major Federal action that

requires an EIS under NEPA. In addition to staff resources, we use contractor support to help produce the environmental documents necessary for making these decisions.

Commission staff reviews every license and relicense application in accordance with the comprehensive development standard of section 10 of the FPA, and evaluates the potential for proposed or existing projects, in combination with other developments in a basin, to create beneficial or adverse impacts.

Staff also assesses the direct, indirect, and cumulative impacts of proposed or existing projects. We will establish a river basin data gathering function to support our cumulative impacts analyses. Relicensing activity in the next 14 years will be focused in 36 river basins. Because many of these basins also contain other Commission-authorized projects and Federally authorized projects, cumulative impacts issues will likely require considerable study and analysis. The river basin data we gather will provide this needed information and enable us to determine how and when to approach multiple-project reviews. We will use new technology to show spatial relationships of environmental resources, hydropower projects, and other developmental activities.

NEPA documents in river basins are linked so we can process licensing, relicensing, and exemption cases quickly and comprehensively. After analyzing the environmental, economic, and engineering aspects of a proposal, the staff recommends whether to (1) issue a license or exemption with conditions that protect, mitigate damages to, and enhance environmental quality, or (2) deny the license or exemption.

Our environmental reviews are not limited to projects with pending applications. We also review the need to reopen existing licenses for possible amendment proceedings regarding cumulative impacts.

FY 1994 and FY 1995 Program Achievements

Hydropower Licensing. During FY 1994, the hydropower licensing program had a number of important achievements. We:

- continued processing the relicense applications for licenses that expired in 1993 — for this group of 157 applications we issued 40 relicenses, completed 13 additional project environmental assessments, issued 6 single- and multiproject draft environmental impact statements, and initiated the preparation of 29 other environmental documents;

- reviewed about 250 sets of comments filed in response to the Commission's Notice of Proposed Policy Statement on the Use of Reserved Authority in Hydropower Licenses

to Ameliorate Cumulative Impacts — the comments differed widely as to whether and how reopener articles in licenses should be used;

- reviewed about 160 sets of comments filed in response to the Commission's Notice of Inquiry on Project Decommissioning at Relicensing — the comments reflected a wide range of opinions on whether a decommissioning policy was needed, whether the Commission had the authority to order decommissioning of projects, and how decommissioning would be paid for if ordered;

- took action on applications for 28 original licenses and 44 relicenses, including 40 of the relicenses filed in 1993;

- completed 35 EAs for 43 license and relicense applications;

- conducted 18 negotiations with fish and wildlife agencies under section 10(j) of the FPA;

- negotiated an environmental settlement on the Walters Project, the Commission's oldest pending relicense application;

- prepared four river basin EAs in cooperation with the U.S. Forest Service for hydropower projects located in whole or in part on lands managed by the Forest Service;

- worked with the Council on Environmental Quality and five other agencies and nongovernmental organizations to prepare a Cumulative Effects Handbook that will be useful in analyzing hydropower projects;

- assisted Georgia Power Company, prior to filing an application, on one of the first applicant-prepared EAs, reducing the need for staff review after filing;

- acted as facilitators in the deadlock between New York resource agencies and Niagara Mohawk Power Company regarding fish entrainment and mortality studies by meeting with these entities and forming a joint study review team;

- issued 11 relicenses following the development of a settlement agreement between Consumers Power Company and five state and Federal agencies — we generally accepted the settlement agreement that required a wide range of mitigation and enhancement activities by the licensee; and

- worked to improve policy coordination between the Commission and other Federal agencies.

Dam Safety and Inspections. During FY 1994, the dam safety and inspections program accomplished the following significant actions:

- completed 900 dam safety evaluations and approximately 2,200 dam safety inspections;
- completed 50 emergency action plan tests at major multi-development projects;
- conducted state-of-the-art seismic evaluations to assess the merit of new seismic theories;
- used seismic analysis to evaluate embankment dams constructed by hydraulic fill methods and those embankment dams founded on loose, potentially liquefiable soils;
- required safety modifications at more than 90 dams;
- [illegible]ided technical assistance to the Nuclear Regulatory Commission for its dam safety program through a memorandum of agreement (MOA), and provided technical assistance to DOE to implement its dam safety program through a similar MOA; and
- signed an MOA with the Federal Emergency Management Agency to provide training related to emergency action planning for dam failures to state dam safety officials and to dam owners that fall under state jurisdiction.

Project Compliance and Administration. In the project compliance and administration program, we:

- completed 31 EAs for license or exemption amendments, surrender of licenses, and exemption revocations;
- initiated preparation of five EISs;
- reviewed and completed action on about 1,100 post-licensing items;
- initiated 12 reopener article proceedings (the re-evaluation of existing projects to determine the need for environmental protection measures not anticipated during original licensing), continued work on 13 pending reopener proceedings, and completed work on 2;
- completed 20 compliance audits;
- issued a notice of proposed rulemaking on the hydropower program's administrative annual charges program — the proposed changes in the assessment method would impact all existing and future licensees and exemptees;

- initiated settlement efforts in two highly contentious proceedings in California (Lower Mokelumne River Project No. 2916 and New Don Pedro Project No. 2299) to ultimately determine the amount of water to be allocated to fish resources versus the amount allocated to consumptive water users;

- approved 16 efficiency upgrades at licensed or exempted projects totalling 75.3 megawatts of additional capacity;

- worked extensively with the General Accounting Office (GAO) in its 2-year investigation of our compliance and dam safety program, which resulted in a May 1994 GAO report finding that the program is being successfully administered;

- assessed more than $600,000 in civil penalty fines for violations, including failures to maintain safe public recreational facilities, to maintain required minimum flows, and to follow approved plans and specifications in project construction;

- completed headwater benefits determinations for 4 river basins, which resulted in $2.4 million in headwater benefits assessments, in addition to $6 million in annual assessments, for a total assessment of $8.4 million; and

- published a PC computer version of the Commission's Headwater Benefits Energy Gains computer model.

During the first quarter of FY 1995, we have:

- conducted 284 dam safety inspections;

- completed 182 dam safety engineering evaluation studies;

- served on subcommittees of the Interagency Committee on Dam Safety, tasked to review and update the "Federal Guidelines for Dam Safety" published in 1979;

- developed and conducted a training course in developing and testing emergency action plans, under an MOA with the Federal Emergency Management Agency, for dam owners regulated by the states and emergency preparedness agencies;

- issued eight relicenses for licenses that expired in 1993;

- issued 10 draft environmental impact statements involving 34 projects;

- issued final policy statements on the use of reserved authority in hydropower licenses to ameliorate cumulative impacts and on project decommissioning at relicensing;

- issued, for an amendment of license, the first draft EA prepared by a third-party contractor;
- issued seven environmental assessments for proposed modifications at licensed or exempted projects;
- formed a multi-disciplinary license transition group to ensure that owners of recently licensed and relicensed projects clearly understand the terms and conditions of their licenses, what they are responsible for, and the steps needed to achieve and maintain compliance;
- approved five efficiency upgrades at licensed or exempted projects totalling 15.1 megawatts of additional capacity; and
- implemented administrative changes for filing aperture cards, thereby eliminating duplicative filing requirements.

FY 1995 and FY 1996 Program Issues

In FY 1995 and FY 1996, we plan to:

- continue to analyze water resource projects consistent with achieving comprehensive development, protecting environmental resources, maintaining dam safety, and ensuring compliance with authorizations we issue;
- explain our approach to licensing, relicensing, and post-licensing administration through interactive activities and outreach meetings with members of the public, resource agencies, and the hydropower industry;
- complete our multi-year relicensing activity;
- implement the Commission's policy statements on decommissioning and cumulative impact reopener articles;
- initiate 15 new river basin studies for headwater benefits;
- investigate the need for a compliance staff presence in the regional offices to effectively address emerging environmental issues;
- establish a river basin data gathering function to support staff cumulative impact analyses;

- continue to address the many environmental issues at projects that were built and began operation more than 30 years before the enactment of the NEPA;
- increase the frequency of inspections of low hazard potential dams to help ensure their safety for environmental and economic reasons;
- improve program efficiency through automated data filing, continued development of a consolidated database and management information system, and full development of a geographic information system;
- increase staff activities at various times before and after application filing to (1) work with potential applicants to implement new third-party contracting provisions, (2) resolve pre-filing conflicts between agencies and applicants, (3) conduct scoping meetings before preparing all license and relicense EAs, (4) analyze cumulative impacts of multiple projects, and (5) participate in settlement conferences;
- investigate and bring into compliance violations of hydropower licensing and exemption requirements;
- evaluate the jurisdictional status of unlicensed hydropower projects and start the licensing process for those that are required to be licensed;
- encourage licensees to undertake efficiency upgrades;
- require licensees to modify project facilities and operations to accommodate environmental concerns identified by the Commission and natural resource agencies;
- continue efforts to improve coordination with other Federal agencies; and
- work proactively with our licensees during the critical 6 to 12 months after license issuance to improve compliance by ensuring that they understand their regulatory obligations, inherent responsibilities, and the steps they need to take to achieve and maintain compliance.

Hydropower Licensing

We issue three types of authorizations for hydropower development: preliminary permits, licenses, and exemptions from licensing. Permits allow holders to study the development potential of sites for 3 years with the exclusive right to apply for a license or an exemption during the permit's term. Original licenses are effective for up to 50 years. We issue

exemptions to certain small projects in perpetuity; exemptions do not confer on the holder the power of eminent domain and are subject to fish and wildlife conditions that Federal and state fish and wildlife agencies impose.

Relicensing. Our licensing workload continues to be affected by the filing of 157 relicense applications from projects whose licenses expired in 1993. Throughout the processing of each relicense application, we are ensuring (1) full agency and public participation, and (2) open and thorough environmental reviews. Relicensing has brought many participants to our proceedings who raise a wide variety of issues. We continue to address new and difficult questions on project design, operational changes, and the balancing of competing interests. We expect to complete the processing of these applications in FY 1996.

Increased Prefiling and Postfiling Staff Involvement. Federal and state agencies, Indian tribes, and the public can and do participate extensively in the licensing process. This participation begins as early as 3 years before a license application is filed, when the potential hydropower developer follows the prefiling consultation requirements in our regulations.

These consultation requirements ensure that an applicant considers the broad range of key environmental, engineering, and economic factors in preparing an application. The studies conducted by the applicant help us evaluate the proposal and expedite processing once we receive the application.

Commission staff will continue to be involved throughout the pre- and post-application filing periods. They will, if appropriate, attend meetings between applicants, agencies, and the public during the first and second stages of prefiling consultation to help resolve disputes and facilitate the preparation of acceptable license and relicense applications. We expect to substantially shorten the processing time for such applications.

Third-Party Contracting. The Energy Policy Act authorized the Commission to permit applicants — at their election — to pay outside contractors to prepare environmental documents. The Energy Policy Act authority is limited to applications filed after October 24, 1992, the date of enactment. However, in response to a Commission request, the Office of Management and Budget clarified that the Commission may implement a voluntary third-party contracting program for *all* applications. The third-party contracting authority will be used by those applicants wishing to fund the preparation of the environmental document during the prefiling stage of a license application.

If the provisions of the third-party contracting authority are used routinely by applicants, there could be a reduced need for contract funds in the future. However, we do not know the extent to which third-party contracting will be requested by applicants.

Three projects are in the very early stages of the third-party contract process. We expect a similar level of third-party contract activity in FY 1996.

Interagency Cooperation. Under section 10(j) of the FPA, we must include in all hydropower licenses specific conditions to protect, mitigate damages to, and enhance fish and wildlife resources. We must base the conditions on recommendations from fish and wildlife agencies under the Fish and Wildlife Coordination Act. In FY 1996, we expect to conduct 63 section 10(j) processes. In this process, we:

- review fish and wildlife recommendations and receive clarification on recommendations, if necessary;
- make a preliminary determination of any inconsistency between fish and wildlife recommendations and applicable law (including notifying all parties of the determination);
- obtain responses of interested parties; and
- hold meetings at our discretion or as requested by any interested party within 75 days of a preliminary determination.

An example of the high level of interest in our licensing and relicensing activities was the receipt of 800 study requests from Federal and state resource agencies, in response to the 157 relicense applications. These study requests are an outgrowth of our efforts to make relicensing an activity that is truly integrated at the Federal, state and local levels. Whenever possible, we will continue to collaborate with other Federal and state agencies in our environmental reviews during licensing activities.

During FY 1996, we will continue to pursue options to expand our cooperation with Federal and state resource agencies when conducting environmental reviews, with an objective of reducing needless duplication and processing time.

Dam Safety and Inspections

We are responsible for inspecting approximately 2,200 dams. These are dams under license or exemption and dams at projects we have found to need a license or exemption. Our dam safety program complies with the Federal Guidelines for Dam Safety issued under a Presidential Executive Order. We developed our dam safety program to ensure that the dams under our jurisdiction are properly constructed, operated, and maintained.

Over two-thirds of jurisdictional dams are more than 50 years old. As dams age, concern over their safety and integrity grows. Therefore, project oversight and a periodic inspection program are extremely important.

Our periodic inspections verify the structural integrity of dams. They identify necessary maintenance and remedial modifications. Inspections during project construction ensure that the project, as actually built, complies with the approved design. Inspections also ensure that projects get the maintenance they need and that licensees comply with license provisions. This safeguards the goal for projects to fully realize multipurpose benefits.

Through inspections we identify safety problems at projects before they lead to dam failure or jeopardize public safety. This aspect of the program:

- prevents the loss of life and property damage;
- identifies maintenance needed to avoid dam safety problems;
- maintains electrical capacity and energy production;
- safeguards water for domestic, industrial, and irrigation use;
- ensures flood control capabilities;
- protects the environmental values of the project; and
- protects the public's safety during recreational activities.

We conduct periodic inspections from the time we receive an application for a proposed project through project operation. These include prelicense, construction, operation, exemption, public safety, special, and independent consultant inspections. We also make unscheduled inspections to investigate potential dam safety problems, unlicensed projects, complaints about the construction and operation of projects, safety concerns related to natural disasters, and compliance issues.

In addition, economic and environmental concerns have increased the need for more frequent surveillance of low hazard potential dams. While failure of a low hazard potential dam presents a low potential risk to life and property, experience has demonstrated that incidents at these dams can cause significant economic and environmental impacts.

Environmental and Public Use Inspections. The reservoirs at non-Federal hydropower projects provide extensive recreational opportunities for the general public. Recent estimates

show that about 100 million recreation-visitor-days are spent each year at jurisdictional projects. The safe use of the projects by the public is an important Commission concern.

Environmental specialists conduct environmental and public use inspections of projects with major recreational developments. The focus of the inspections is protection of the environmental resources, ensuring that the recreational facilities are operated safely, and confirming that the project is in compliance with the environmental and public safety requirements of the license or exemption.

Periodic Inspection by Independent Consultant. Commission regulations require that an independent consultant inspect and evaluate all major licensed and exempted dams every 5 years. The consultants conduct site inspections as well as evaluate or confirm the adequacy of the spillway capacity and structural stability of the dam. We use the results in conjunction with annual inspections to ensure the safe operation of the project.

Dam Safety Engineering Evaluations and Studies. Our dam safety program requires engineering reviews, evaluations, and studies during construction, operation and maintenance of dams and related facilities to ensure their long-term structural integrity. These include:

- the review of plans and specifications for new project construction, major dam safety modifications, and repairs;
- engineering evaluations to ensure dam safety during predicted seismic and hydrologic events;
- review of design analyses for dam safety improvements;
- review of requests for exemption from the requirements for emergency action plans and independent consultant inspections; and
- the engineering evaluation of significant hazard potential projects.

Determining the impact on dams of natural disasters, such as the recent earthquake in California or the floods in the Midwest and Georgia, is an important and continuing effort. During FY 1996, we will continue to emphasize detailed evaluations of the effects of seismic activity on dams as a result of additional knowledge developed from recent seismic events in the United States. We will apply this information when investigating and analyzing, consistent with state-of-the-art methodologies, embankment dams constructed by hydraulic fill methods and those founded on loose, potentially unstable soils. Dam safety and inspections staff will direct the necessary studies by the dam owners at each stage of the work. We will also continue working on evaluations of large flood events as they affect the safety of dams.

The criteria used in, and the analytical approach applied to, dam safety evaluations are important elements of a sound dam safety program. To provide guidance to our engineering staff and dam owners, we publish *Engineering Guidelines for the Evaluation of Hydropower Projects*. We expect to publish additional chapters to our *Engineering Guidelines* on such matters as arch dams, buttress dams, instrumentation and monitoring of dams, and water conveyance facilities (penstocks, canals, and other conduits).

Emergency Action Plan Reviews and Tests. Since 1981, we have required licensees and exemptees to submit an EAP for projects found to have the potential for the loss of life and property in the event of dam failure. After the regional office reviews and approves the plan, the licensee or exemptee updates the plan annually. Every 5 years, licensees must update and refile the plans. This includes coordinating with state and local emergency-preparedness agencies. We verify that plans are current during our periodic inspections.

In addition to an annual test for licensed project operators, each licensee is required to conduct a full exercise of an EAP every 5 years, to test the readiness of licensee personnel and to involve state and local emergency preparedness agencies responsible for evacuation. These exercises are consistent with the national policy guidance of FEMA on emergency preparedness regarding natural disasters. The effectiveness of emergency planning is a critical element in any overall dam safety program.

Dam Safety Modifications. Our staff identifies the need for a dam safety modification through inspection and evaluation, an analysis of an independent consultant's report, or on the basis of an owner's analysis. We base modification decisions on field investigations, laboratory tests and engineering analyses in accordance with our *Engineering Guidelines*, and review any further investigations and analyses to solve the problem. After approving a design for a modification, we inspect the actual work. These inspections ensure the use of approved construction methods, ensure that the construction conforms to the design, and help us determine if site conditions warrant changes in design or construction methods. Project operators may need modifications to:

- increase the capacity of spillways to handle floods;
- provide overtopping protection for embankments during unusual flood events;
- repair weathered concrete, particularly at slab and buttress dams;
- repair embankment dams subject to liquefaction resulting from seismic activity; and
- improve the structural stability of dams, especially those on complex foundations with weak geologic features.

Project Compliance and Administration

We monitor and investigate compliance with the FPA, Commission rules and regulations, and the terms and conditions of more than 1,900 licenses, exemptions and preliminary permits. Meeting requirements for dam safety, public safety, and environmental reviews protects life, health, property, and the environment. We make sure licensees and exemptees comply with our policies to realize the multipurpose benefits of water resource developments.

The compliance program includes investigations of actual incidents or allegations of noncompliance with our requirements; ensuring technical, environmental and engineering analyses; and taking actions to resolve instances of noncompliance. When compliance violations merit assessments of civil penalties, we prepare notices of proposed penalty, assessment orders, and settlement agreements. We also evaluate project compliance to see what license conditions or changes are necessary during the relicensing process to reduce compliance problems.

Compliance Monitoring. All licenses and exemptions contain conditions regarding the construction and operation of the hydropower projects to meet increased environmental protection and public safety requirements. Monitoring compliance with the complex terms and conditions in the large number of licenses and exemptions we issued in the 1980s will continue to be a significant part of the compliance workload. As new licenses are issued, a surge in project compliance and administration workload typically develops during the next 1 to 2 years, consisting of the post-licensing filings needed to meet procedural, structural, operational, environmental, and other requirements. Accordingly, we foresee increased workload in FY 1996, particularly in the environmental amendments area.

Our compliance staff maintains regular contact with licensees, exemptees, Federal and state agencies, and environmental organizations. This improves communication and ensures better compliance monitoring.

We initiate a compliance action when a licensee or exemptee does not:

- construct the project as specified within the required time frame;
- operate the project within the requirements of the authorization;
- maintain the project as required by the FPA and our rules and regulations; or
- perform other actions we have required.

Compliance Actions. As part of our compliance efforts, we:

- issue overdue action letters for items that are more than 30 days overdue, advising the licensee that (1) it is in violation, and (2) it should submit the items or request an extension of time;
- issue letters of inquiry to licensees that typically forward an allegation or complaint and require the licensee to respond;
- issue directives that (1) require licensees to immediately perform actions, and (2) may notify licensees that they are in violation and subject to penalty or other enforcement actions;
- issue compliance orders pursuant to section 31(a) of the FPA when licensees have failed to comply and have received proper notice;
- revoke licenses and exemptions for violations of final orders; and
- assess civil penalties.

Hydropower License Compliance Tracking System (HLCTS). Automation has improved our compliance efforts. The HLCTS documents every filing requirement of each license, exemption, and preliminary permit, and allows us to efficiently monitor compliance with our regulations and orders.

Compliance Audits. Compliance audits are field evaluations we conduct with multi-disciplinary teams. We tailor these teams for specific compliance problems. Compliance audits help licensees and holders of exemptions understand and comply with the requirements of their licenses and exemptions. This program initiative extends beyond the traditional regulatory posture of responding to filings and uses Commission expertise to help project owners comply with the conditions that protect significant resources.

Compliance History. To determine a project's compliance history, we make a thorough search of our records for the past 50 years. This ascertains a licensee's record of compliance with the terms and conditions of the project's existing license. The results are used when determining whether or not the licensee should receive a new license and, if so, under what conditions.

Unlicensed Constructed Projects. There are some operating hydropower projects that may need to be licensed in accordance with section 23(b)(1) of the FPA. These unlicensed constructed projects may pose public safety and environmental concerns.

We will continue to investigate unlicensed projects in FY 1996. We find these projects through record searches and information from other Federal and state agencies and individuals. Each project requires investigation, including a site inspection, to help us determine whether it is jurisdictional.

Headwater Benefits Studies. Section 10(f) of the FPA requires assessment of headwater benefits. Benefits are the additional hydropower production made possible by the regulation of streamflow by Federal reservoirs and Commission-licensed projects located in the headwaters of river basins.

These studies — for which we use sophisticated computer models — determine the charges we levy against owners of hydropower projects deriving benefits from upstream Federal or Commission-licensed projects. The owners of the downstream projects must pay for the benefits received, as well as for the costs of conducting the studies.

This program produces revenues that help pay for Federal water resource projects managed by the Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration. In FY 1996, we expect to generate $10 million in revenue from annual headwater benefits bills and complete eight initial headwater benefits determinations that should provide additional revenues to the U.S. Treasury of about $7.6 million. We also expect to begin eight additional headwater benefits investigations.

Post-Licensing Amendments. The significant rise in demand for water resources over the past several years has substantially increased requests to modify licensed hydropower projects. At the time a project is licensed, not all potential adverse impacts are foreseeable. Through reopener articles in the licenses, the Commission reserves authority to institute, after notice and opportunity for hearing, changes to project structures or operations, where warranted, to protect, conserve, or enhance a variety of important environmental resources.

Regional Compliance Staff Presence. We plan to investigate the need for the presence of compliance staff in our regional offices, and to relocate a limited number of compliance staff to those offices, if appropriate. Staff will be placed where local issues and regional concerns warrant continued, significant staff involvement on resource issues involving multiple projects, cumulative impact analyses, and the coordination of regional responses to Endangered Species Act problems.

Such issues include the major fish restoration programs, such as the ongoing Atlantic salmon restoration program in the Northeast, and the dramatic declines in the fish stocks in the Pacific Northwest. Current anadromous fish stocks in rivers and tributaries from Northern California to Washington State are at a fraction of the historical levels. As a result, Federal resource agencies are under continuing pressure to list these fish species as threatened or endangered.

The Endangered Species Act obligates the Commission to evaluate the impacts of existing projects on endangered species. The listing of three salmon species in the Columbia River basin alone has caused unprecedented impacts to hydropower production in that basin, with generation loss estimated in the millions of dollars. There are over 150 more fish species under consideration for possible listing. This undoubtedly will have significant impacts on non-Federal hydropower development.

Competition for limited water resources is similarly evidenced by such proceedings as the San Francisco Bay Delta proceeding. This proceeding involves potential reallocation of water resources from various uses including municipal, irrigation, and hydropower, in order to provide for enhancements to the Bay ecosystem. Over 150 projects are potentially impacted by the Bay proceeding.

The substantive increase in population in the southeastern part of the country creates ever-increasing demands for water supplies, which are frequently sought from large-volume reservoirs created by non-Federal hydropower developments under license. As the water supply demands increase, conflicts between competing uses and users materialize.

Summary of Hydropower Workload and Resource Needs

FY 1996 will be a transition year for workload in the hydropower program. The general shift will be away from relicensing, which has been our focus for several years, toward increased postlicensing activities involving both compliance and dam safety matters. By the end of FY 1996, we expect to have completed the 157 relicense applications from projects whose licenses expired at the end of 1993. We will also begin a new prefiling activity — the river basin data gathering function to allow for improved cumulative impacts analyses.

Hydropower Licensing. We expect a significant reduction in the pending licensing workload by the end of FY 1996 due to a substantial decrease in the number of relicense and major new capacity license applications and completion of a large number of pending relicensing cases. The continued use of contractor support has supplemented staff work while accommodating the need to conduct thorough environmental analyses to meet ECPA and NEPA requirements. These resources also will help avoid delays in processing the remaining relicensing applications and reviewing new capacity projects. However, the funding requirement for environmental contractor support will decrease from FY 1994 to FY 1996.

In FY 1996, we expect to prepare 32 NEPA documents for over 70 license or relicense applications. Many of these applications raise complex issues that will require an EIS. We plan to complete five EISs on individual projects, and 12 more encompassing 53 projects proposed in areas within defined river basins.

We expect the number of applications for new capacity hydropower projects to remain relatively low. However, these applications will continue to raise new and difficult engineering, environmental, economic, and legal issues. These issues will require us to address a number of policy questions and to balance conflicting resource considerations while finding unique, site-specific, and basin-wide solutions to licensing proposals.

The FY 1996 budget request also supports a continuing staff effort to help applicants — as well as Federal, state and local resource agencies — to better understand the Commission's licensing requirements. This will include more frequent staff attendance at meetings in the project area to assist applicants, at their option, to substantially complete NEPA documents prior to license applications being filed — either through the applicants' use of third-party contractors for EIS's or through the use of applicants' in-house staff or contractors to prepare environmental assessments.

Dam Safety & Inspections. Inspection workload will remain high in FY 1996. We plan to conduct in-depth dam safety evaluations on the structural integrity of approximately 1,000 major hydropower projects. We will also conduct over 2,200 dam safety inspections, and 240 environmental and public use inspections. This workload is extremely important and will require continuing high levels of staff attention because: (1) dams are aging, (2) new techniques identify hazards sooner and more accurately, (3) new seismic data will require updated evaluations, and (4) improvements in determining maximum hydrologic events will require re-evaluations of spillway designs and hazard potential ratings of dams. Furthermore, recent discoveries of inadequate construction activities at licensed projects have led us to increase the frequency of inspections at projects where the potential exists for significant environmental or other damage. This budget request includes contract funds for recognized experts who will help conduct the analyses required for complex dam structures, and develop necessary remedies to assure structural integrity.

We expect dam safety modification workload to remain high through FY 1996, as improved dam safety instrumentation programs help identify problems in aging dam structures. Contractor support will supplement staff resources in the area of dam safety modifications. This support includes dam safety research and analysis to provide the program with the latest techniques needed to identify and resolve seismic, hydrologic, and geotechnical problems, and to develop improved analytical tools.

Compliance and Administration. The workload in the project compliance program is expected to increase in FY 1995 and FY 1996. This increase is due to: (1) the large number of licenses we issued in the 1980s; (2) the increased number of conditions included in licenses, particularly those related to environmental protection, mitigation, and enhancement; (3) the new licenses the Commission will have issued from the large number of relicense applications; (4) the need to ensure consistency with a basin-wide comprehensive development standard; and (5) the

increased application of reopener articles to address emerging environmental issues. We expect this workload to peak by FY 1997, as the large number of relicenses the Commission will have issued results in compliance filings — many of which are due in the first few years of the new license. Additional staff for this increased workload is not requested, because the high level of workload is not expected to continue indefinitely.

Relicenses issued in FY 1994 and FY 1995 will place greater emphasis on environmental mitigation and enhancement. These new licenses will also identify environmental issues that will need to be addressed at other existing projects. Ultimately, we will ensure that all projects regulated by the Commission comply with the comprehensive development requirements of the FPA throughout the terms of their licenses or exemptions.

We will complete headwater benefits investigations that we have targeted for priority action to ensure that appropriate revenues continue to flow into the U.S. Treasury as compensation for the benefits that our licensees derive from upstream Federal improvements.

[See Appendix D for hydropower workload tables.]

ELECTRIC POWER

Operating Expenses

($ in Thousands)

	FY 1994 Actual	FY 1995 Appropriation	FY 1996 Request
TOTAL PROGRAM	$32,398	$35,639	$34,246
FTEs	320	340	340

Overview

We regulate the wholesale power rates, transmission service and rates, and corporate activities of about 200 investor-owned electric utilities, as well as a few rural electric cooperatives not regulated by the Rural Utilities Service. We also determine qualifying facility status for small power producers and cogenerators under the Public Utility Regulatory Policies Act of 1978 (PURPA), determine exempt wholesale generator status under section 32 of the Public Utility Holding Company Act (PUHCA) as amended by the Energy Policy Act, and review the rates of the five Federal power marketing administrations.

We analyze and act on filings involving:

- wholesale power sales, and transmission of electric energy, in interstate commerce by public utilities;
- applications to order transmission service;
- exempt wholesale generators;
- small power producers and cogenerators;
- corporate mergers and acquisitions;
- security issuances and assumptions of liabilities;

- interlocking directorates;
- power marketed from Federal hydroelectric projects; and
- accounting and financial reporting issues.

FY 1994 and FY 1995 Achievements

In the electric power program, we:

- continued implementation of the Energy Policy Act and related matters by (1) issuing a proposed rule regarding the recovery of stranded costs, (2) taking action on seven applications for transmission services filed pursuant to the amended section 211 of the Federal Power Act (FPA), (3) approving 87 exempt wholesale generator applications, (4) issuing the transmission information rule under section 213(b) of the FPA and receiving the first set of information filings, and (5) issuing a final rule on notice requirements under section 211;
- initiated a re-examination of Commission pricing policy, including holding a technical conference on transmission pricing and working toward development of a transmission pricing policy statement, issued in October 1994;
- revised the Commission's analysis of undue discrimination in transmission services by adopting a comparability standard;
- revised the Commission's analysis of the public interest for approving mergers by adopting a requirement that comparability tariffs be filed by merging utilities;
- issued a proposed rule regarding the permissible types of investments for utilities' nuclear plant decommissioning trust funds;
- made our automated Rates and Tariff Index System (RATIS) available to the public through remote public access;
- revised the Commission's policy regarding its jurisdiction over sequential merger activity involving public utility holding companies;
- issued six opinions and seven rehearings of opinions, including an opinion regarding the ability of a utility to recover unamortized investment, expenses, and decommissioning costs for a nuclear generating unit that was prematurely shut down;

- processed approximately 700 rate filings received during an "amnesty window" that closed December 31, 1993;
- issued a policy statement on coordination transaction ratemaking treatment for emission allowances under the Clean Air Act Amendments of 1990;
- accepted applications for power marketer status from a growing number of applicants (power marketer filings now total about 75);
- received filings by three regional transmission groups located in the western United States and conditionally approved two in October 1994;
- carried out rulemaking proceedings on a variety of other matters, such as treatment of confidential responses to Form 580 fuel reports, recovery of DOE nuclear assessments, and clarification of the Commission's requirements for certification of qualifying facilities;
- acted on several controversial merger applications, including issuing a hearing order on the proposed El Paso-Central and South West merger, issuing a final opinion approving the Entergy-Gulf States merger, and accepting the PSI-Cincinnati Gas & Electric Company merger;
- issued the *Annual Qualifying Facilities Report* providing comprehensive information on qualifying facilities certified from the inception of PURPA;
- completed the seventh biennial review of fuel and energy purchase practices of public utilities during the 1990-91 period pursuant to section 205(f)(2) of the FPA;
- issued a staff report on the response of electric utilities to the record cold temperatures that hit the eastern United States in January 1994;
- developed and field-tested a software application for electronic filing of FERC Form No. 1, Annual Report of Major Electric Utilities, Licensees and Others, and on December 29, 1994, issued a final rule requiring electronic filings, beginning with the 1994 reporting year; and
- initiated a major new inquiry about the function and regulation of power pools, including new institutional arrangements to increase wholesale power competition.

FY 1995 and FY 1996 Program Issues

The Commission has undertaken significant initiatives to implement the electric provisions of the Energy Policy Act and foster Congress' goal to encourage a competitive bulk power market. Because competition, not deregulation, is coming to the electric industry, this effort will entail an increase in workload. We have laid the groundwork to help ensure that increased competition and new ways of doing business will provide benefits to consumers. FY 1995 and FY 1996 will demand continued high levels of effort and vigilance to provide for a smooth transition to a competitive industry. While this effort will take place alongside the processing of a growing number of traditional filings, we believe this increase in regulatory effort will promote greater consumer benefits.

Helping Utilities Meet Power Resource Needs

Even with greater efforts toward conservation and load management, utilities will likely need substantial additional capacity to avoid capacity constraints and reliability problems during the next decade. Some utilities are preparing for this likelihood by constructing new capacity or by arranging for purchases of generating capacity from new generating entities. We expect an increase in FY 1996 in the number of rate applications from traditional utilities seeking to recover the costs of new construction or power purchased elsewhere.

Traditional utilities are increasingly relying on non-traditional sources to satisfy their generation needs. A new non-traditional power sector has emerged to supply the power needs of some traditional electric utilities that are reluctant to take on new construction themselves. These non-traditional companies — including both affiliated power producers (APPs) and independent power producers (IPPs), qualifying cogenerators and small power producers — are constructing generating facilities for the purpose of selling their output to existing utilities. The growth of non-traditional power suppliers has contributed to increasing levels of competition in the electric utility industry and will increasingly be a factor in the Commission's new approach to electric power regulation.

January 1994 Cold Wave and the Industry's Response

During the week of January 16, 1994, large portions of the eastern half of the United States experienced record low temperatures, creating record high demands for electricity and severe strains on generation and transmission systems. After implementing a variety of less severe steps to increase generation and moderate load, on January 19, 1994, Virginia Electric and Power Company and utilities within the Pennsylvania-New Jersey-Maryland Interconnection implemented controlled load shedding to preserve the integrity of the interconnected network. Electrical service to over 2,300 megawatts of firm load customers was interrupted on that

morning. That afternoon, an energy emergency was declared in the District of Columbia, leading to the shutdown of all nonessential commercial, industrial and governmental activities for the rest of that day and the following one.

On January 26, 1994, the Commission instituted an inquiry on sales, purchases, and transmission transactions during this period of record cold to find out how well the industry dealt with the emergency, and to determine what changes need to be made to improve our program.

On May 31, 1994, the Commission issued a staff report on electric utility responses to the January cold wave. Staff concluded that the electric power system performed well during the extremely cold weather that hit the eastern United States. The report also made the following recommendations: (1) improve interregional communications systems to help utilities better communicate their supply needs during severe system conditions; (2) design tariff arrangements to facilitate utility purchases from non-traditional trading partners during emergencies; and (3) im[illegible]e procedures for updating transmission system ratings during emergencies. The report conclu[illegible] that these incremental improvements may help reduce the extent and duration of power supp[illegible] [illegible]ergencies by better assuring that all available resources are used to resolve extreme elect[illegible] [illegible]ystem emergencies in the future. We will continue to monitor similar situations as they relate to Commission jurisdictional matters.

Transmission Access and Pricing

A key element in meeting the industry's future power needs is transmission service. Assured open transmission access — that is, access available to all buyers and sellers of wholesale power — is necessary for non-traditional sources of generation to compete effectively with traditional electric utilities. Such access must be on a just, reasonable, and not unduly discriminatory or preferential basis.

The electricity provisions of the Energy Policy Act expanded the Commission's authority to compel a utility to provide transmission service. Specifically, Congress modified section 211 of the Federal Power Act to allow the Commission to order transmission services, upon request, if it finds the request is in the public interest and will not unreasonably impair utility system reliability. This provision has given the Commission the ability to sharply reduce the monopoly power that transmission system owners can exercise by favoring the transmission of their own electric generation supplies over the transmission of other generation supplies. In addition, voluntary transmission tariffs of broad applicability provide even greater assurance that market power cannot be exercised. A number of such tariffs have been filed.

On May 11, 1994, the Commission issued an order on an open access tariff (American Electric Power Service Corporation), which set forth a legal requirement that utilities provide comparability of service. This order requires transmission owners to offer third parties the same

uses of their systems that they provide to themselves. The order lays out a "Golden Rule" for transmitting utilities — do unto others as you do for yourself. The Commission is in the process of analyzing what comparability is and how it will be implemented in order to resolve a number of complex legal, technical, and policy issues. The Commission expects to define the comparability requirement in greater detail in the weeks and months ahead, and to examine in detail how broadly both comparability and open-access requirements should be applied.

The Commission also conducted a comprehensive inquiry into whether fundamental changes should be made in the historical transmission pricing practices of the past half-century. Our goal is to reform our transmission pricing, as necessary, to serve the long-term purposes of increased competition, reliability, efficiency, and equity based on what we learn through the pricing inquiry. To help carry out that goal, the Commission issued a transmission pricing policy statement in October 1994, which permits a wide range of non-traditional pricing proposals to be filed, such as distance-sensitive pricing, loop flow pricing, and other innovative concepts.

Because transmission access is an essential element in creating a competitive wholesale market for electric power, we expect an increase in the number and complexity of transmission-related filings, both requests under section 211 for Commission-ordered transmission access and voluntary filings of open access transmission tariffs. Under section 211, we have received 16 transmission access applications so far. Of these, seven have been granted, one has been rejected, one was withdrawn, and seven are awaiting action. We expect workload to include:

- applications requesting the Commission to order transmission, and voluntary offers of open access transmission;
- disputes about transmission system reliability as existing capacity becomes more fully utilized and more frequently constrained;
- new approaches to the pricing, terms, and conditions of both firm and nonfirm transmission service;
- issues related to stranded investment in generating plants as a utility's existing wholesale customers use transmission access to purchase power and energy from other sources; and
- proposals for voluntary transmission associations (regional transmission groups) to deal with the increasingly complex technical aspects of enhanced transmission access, dispute resolution, and multiparty system planning.

This caseload is new and shows no sign of peaking or leveling out; therefore, we cannot quantify the full workload impact at this time. However, it is clear that these complex issues will call for the Commission to expand and build upon its technical and power system engineering skills.

Additionally, unless the industry can agree to resolve technical disputes without resorting to complaints before the Commission, the staff will require enhanced power system analytical capabilities, such as computerized power flow simulation models, to effectively address these issues.

Regional Transmission Groups

In order to capitalize on local public and private resources, we are encouraging regional transmission groups (RTGs) to help implement transmission services and resolve transmission issues. The Commission issued a policy statement on July 30, 1993, encouraging the development of RTGs, and providing guidance regarding the basic components that should be included in RTG agreements filed with the Commission.

The policy states that properly functioning RTGs will serve the public interest by (1) enabling the market for electric power to operate in a more competitive — and thus more efficient — manner, and (2) providing coordinated regional planning of the transmission system to assure that system capabilities are adequate to meet system demands. RTGs will decrease the delays that are inherent in the regulatory process, resulting in a more market-responsive industry. RTGs may also significantly enhance regional transmission planning by providing a mechanism for cooperation among state commissions and the utilities they regulate. The policy statement also invites proposals for the Commission to extend deference to agreements reached voluntarily under an RTG, such as those reached pursuant to alternative dispute resolution procedures.

Thus, RTGs have the potential to provide substantial benefits to the public and the Commission by relieving regulatory burdens, and by providing a forum for consensual agreements within new regional institutions. They can channel the expertise of the electric utility industry toward resolving technical issues relating to transmission system operations and toward planning the transmission system to meet the needs of all parties.

The first three RTG filings were made by western utilities in FY 1994. The Commission accepted two of the proposals on the condition that the RTGs modify their agreements (1) to ensure that the planning process would result in a single regional coordinated transmission plan to be supported by all members, and (2) to require that all members commit to offer comparable transmission service, either under individual tariffs or under a regional tariff.

In the future, we will have to address the responses of the two RTGs to whom we have given conditional acceptances, and reach resolution on the pending filing. In addition, our ongoing close interactions with other pools and utility affiliations indicate that three RTG filings are being developed, and four other groups are strongly considering filing RTG status. We expect RTG filings will constitute a considerable workload in FY 1995 and FY 1996.

Non-traditional Power Producers and Power Marketers

Non-traditional power producers are entities that own and/or operate generation facilities whose output is sold to traditional electric utilities for resale. They may be independent power producers or they may be affiliated with traditional investor-owned utilities. One class of non-traditional power producers is exempt wholesale generators (EWGs).

Since independent power producers generally lack market power, we usually permit them to charge market-based rates. Those affiliated with traditional utilities also may sell at market-based rates, but they present an array of difficult self-dealing and affiliate abuse issues that are not presented by truly independent power entities. This situation requires extra scrutiny by the Commission, and often requires specific conditions to prevent affiliate abuse.

Power marketers are a special kind of non-traditional power supplier in that they buy and sell power but neither own generation or transmission facilities nor have a franchised service territory. While marketers do not increase the amount of capacity available to meet the needs of consumers, they can contribute to increased market efficiency to the benefit of ultimate consumers. We have authorized certain power marketers to charge market-based rates subject to appropriate conditions and have waived some of our regulations for them. The Commission has received about 75 applications from non-traditional power marketers. We expect the number of filings involving power marketers to rise during FY 1996.

We have developed new analytical procedures for reviewing filings made by non-traditional power suppliers. These suppliers typically request waivers from existing filing regulations and from accounting and annual Form No. 1 or 1-F reporting requirements. They generally do not establish their rates on a traditional cost-of-service basis. We will continue to process non-traditional suppliers' filings on a case-by-case basis to ensure that the proposed rates are just and reasonable. More experience evaluating market-based rates will help us develop criteria to simplify and standardize the non-traditional supplier's rate application process.

Exempt Wholesale Generators

The Energy Policy Act gave the Commission authority to determine, upon application, the EWG status of firms engaged in owning or operating facilities used for the sale of power at wholesale. EWGs are exempt from the requirements of the Public Utility Holding Company Act. Many of these EWGs are affiliates of U.S. companies doing business overseas, often in newly privatized electric industries and markets. We expect EWGs to provide a significant percentage of new domestic generation requirements in years to come.

Through December 1994, we have received 201 applications for EWG status. Even though the Commission's role is largely ministerial, we expect to see some increase in workload concerning EWG applications until interpretation issues concerning the statute are resolved. Moreover, since many EWGs will become public utilities when they start making power sales, we anticipate increases in rate and other filings by EWGs in FY 1996 and beyond as projects begin operation.

Cogenerators and Small Power Producers

As our experience with EWGs develops, our experience with another class of non-traditional power producers — cogenerators and small power producers — continues to evolve. PURPA gives us the authority to certify small power production and cogeneration facilities as qualifying facilities (QFs) and, in certain cases, to exempt them from some Federal and state regulations. Our PURPA regulations require electric utilities to offer to buy electricity from QFs.

QF applications continue to raise numerous new issues, including:

- novel uses of waste and renewable resources as fuel for small power production facilities, as well as unusual applications of the thermal output of cogeneration facilities;
- more frequent participation in QFs by electric utilities;
- an increase in proposals to include transmission lines as part of the facility;
- complex ownership and financing arrangements supporting QF projects;
- more frequent requests for waiver of the Commission's QF regulations;
- challenges to state proceedings concerning power pricing and jurisdictional issues;
- more frequent challenges by local government entities, utilities and private organizations to applications for QF status; and
- requests that the Commission revoke certification of certain QF projects.

As part of its PURPA oversight activities, during 1994 and 1995 the Commission has responded to concerns of electric utilities that some states have mandated purchases of electricity generated by qualifying facilities at rates which the utilities perceive to be above their avoided cost. For example, in Docket No. EL93-55-000, Connecticut Light and Power Company complained that it was being forced by the State of Connecticut to pay a rate in excess of its avoided cost for purchases of electricity from a waste-powered qualifying facility. On January 11, 1995, the Commission issued an order agreeing with the utility, and deeming the rate to be illegal.

Southern California Edison Company and San Diego Gas and Electric Company filed PURPA related complaints with the Commission in January 1995. The Commission has 60 days in which to decide whether it will act on the complaints.

Clean Air Act Amendments (CAAA) of 1990

The CAAA imposed an obligation on electric utilities to cut total industry sulfur dioxide (SO_2) emissions in half by the year 2000. To minimize SO_2 compliance costs, the CAAA created a nationwide market for tradeable SO_2 emission allowances. Utilities must either reduce their annual emissions to their allocation level or purchase allowances from other owners. New generators must acquire allowances from other participants in the allowance market.

Allowance trading raises a number of novel regulatory issues, which we are addressing. In March 1993, we issued a final rule establishing accounting rules for the treatment of the cost and quantity of allowances acquired, used, sold, or held in inventory by electric utilities. In December 1994, we issued a policy statement on the ratemaking treatment for emission allowances in coordination transactions.

We expect numerous wholesale rate filings beginning in FY 1995, as utilities seek to reflect in jurisdictional rates the costs of allowances they purchase, use, or sell. Compliance will affect some 60 jurisdictional electric utilities by virtue of their ownership (or affiliation with an owner) of particular coal-fired generating plants. Since many of these utilities have numerous rate schedules on file with the Commission, hundreds of rate schedules may ultimately require revision during the Phase I time period. We expect the bulk of these filings during FY 1995 and FY 1996. In addition, we believe that the rate schedules of several large holding company systems will require modification to account for the allocation of CAAA compliance costs among the operating companies that make up these systems.

Electric Rate Filings

We regulate two basic categories of wholesale electricity sales transactions: requirements sales and coordination transactions. Requirements sales are long-term commitments by suppliers of power to meet reliably all or part of the buyer's load. Coordination transactions are sales or exchanges of electricity between utilities for economic purposes and to augment reliability. We expect that rate applications for both requirements sales and coordination transactions will increase during FY 1996 as utilities respond to competitive pressures.

A public utility must obtain Commission approval for any rate or charge associated with the transmission or sale for resale of electricity in interstate commerce. We also have the authority to compel an entity to provide transmission services. As a result of the Energy Policy Act,

which provided the Commission with broader authority to order transmission services, we expect many entities to request Commission orders compelling utilities to provide transmission service.

Automatic adjustment clauses allow electric utilities to change rates to reflect some cost changes without making a filing with the Commission. To ensure efficient use of resources, PURPA directs us to review automatic adjustment clauses in jurisdictional rate schedules every 4 years and the energy and fuel purchase practices of utilities using such clauses every 2 years. During FY 1996, we will continue to closely scrutinize applications to ensure that utility proposals are consistent with our fuel-adjustment clause regulations and accounting procedures, and that costs associated with CAAA compliance and power purchases, if reflected in automatic adjustment clauses, are appropriate.

Until 1988 we could change a utility's existing rates on our initiative or that of an aggrieved customer only prospectively from the date of final resolution of the proceeding. In such cases, ratepayers could not get refunds of excessive rates. The Regulatory Fairness Act (RFA) amended the FPA to provide up to 15 months of refund protection to ratepayers whose existing rates for electric service are found to be too high. During FY 1996, we anticipate that the number of RFA proceedings will continue to increase. Because refund protection lasts only 15 months, we must continue to handle these proceedings as expeditiously as possible.

In FY 1996 we expect to process litigated electric rate cases involving the following issues:

- performance incentive rate proposals;
- intercompany coordination arrangements;
- issues arising from our new transmission authority under the Energy Policy Act;
- interpretation of the terms and conditions of service under power supply and transmission contracts;
- ancillary service issues (e.g., reactive power, load following) associated with transmission-only service;
- post-retirement benefits other than pensions issues;
- decommissioning of nuclear plant costs and funding issues;
- comparability of transmission service;
- non-traditional transmission pricing proposals;

- corporate financing issues;
- premature plant shutdowns;
- buyout costs related to fuel supply contracts;
- changes in rates related to potential changes in corporate income taxes; and
- pass-through of Clean Air Act compliance costs.

Corporate Applications

Utilities are responding to the competitive pressures of the 1990s by reorganizing their corporate structure, merging with their neighbors, and diversifying. In recent years, many electric utilities have enjoyed positive cash flows. After using surplus cash to strengthen their financial posture, some utilities have diversified into other businesses. To isolate such ventures from the regulated utility part of their companies, many utilities have reorganized themselves under a holding company structure. This makes the regulated utility a wholly owned subsidiary of the newly formed holding company. We construe such restructuring to involve a disposition of utility assets requiring Commission authorization.

Utility mergers were rare until the mid-1980s. Now they are becoming more frequent as utilities strive to increase market share, stave off or remedy bankruptcy, or increase efficiency. Merger filings are normally contested and extremely complex. Other competitors who view such business combinations as imposing greater barriers to market entry or eroding their relative market share may vigorously oppose mergers and acquisitions. We expect mergers to be a growing workload area in the coming years.

In merger and asset disposition cases, we must determine whether the proposal is consistent with the public interest. This involves considering:

- the effect of the merger on costs and rates;
- the impact which the combination may have on the effectiveness of regulation;
- accounting implications of the merger;
- evidence of coercion;

- reasonableness of the purchase price; and
- the effect of the merger on competition.

Where the Commission has found that a merger would adversely affect competition or otherwise not be in the public interest, it has imposed appropriate conditions, including requiring access to transmission systems. Furthermore, as the electric industry has become more competitive, the Commission has found that it is in the public interest to require all merging utilities to offer comparable transmission services to mitigate the potential anticompetitive effects of the merger.

Interlocking Directorate Applications

The advent of EWGs and affiliate power marketers will increase the number of interutility corporate interlocks of officers and directors. Moreover, as a result of a 1991 Supreme Court decision, we asserted jurisdiction over certain interlocks involving registered holding company systems. Enforcement of the FPA restrictions on certain corporate interlocks will continue in FY 1996; the restrictions require investigation of corporate entities to prevent the potential for adverse effects on the public interest through self-dealing and other abuses.

Federal Rate Reviews

We review the rates for five Federal power marketing administrations (PMAs). The approximately 130 Federal hydroelectric projects comprise 23 reporting units, some of which make multiple filings. These filing units may file with us as frequently as every year, but not less than once every 5 years. The frequency of such filings depends on the economics of marketing the surplus Federal power and transmission services. The level of filings should remain relatively constant provided inflation rates remain stable.

Accounting and Financial Reporting

An essential element in our electric program is reliable financial accounting information based on sound accounting principles, contained in the Commission's Uniform System of Accounts and uniformly applied to all jurisdictional companies. Financial, statistical and operational data collected through filings of Form No. 1 is an integral part of the Commission's regulatory scheme. During FY 1994, a personal computer software application was developed for electronic submittal of Form No. 1, and was field tested by Form No. 1 respondents. In early FY 1995, a final rule established that the software be used starting with the 1994 reporting year, enhancing the Commission's ability to use the data in carrying out its regulatory responsibilities.

The accounting information from utilities' financial statements forms the basis for measuring both economic performance and compliance with the terms of approved tariffs. Both the Commission and the public need to know that the financial data we use in regulating the electric power industry are sound and reliable. In general, we audit each electric utility every 5 to 6 years to ensure the integrity of the accounting data and compliance with the Uniform System of Accounts and related regulations.

Accounting information gives us data on investment costs of facilities, the cost and types of capital used to finance such investments, and operating costs and revenue data we use to establish just and reasonable rates and to determine compliance with the rate schedules on file.

The scope of the audits includes a review of billings under automatic adjustment clauses and formula rates. We require companies to make refunds to wholesale customers when the audits disclose improper billings under such rate mechanisms.

Streamlining Efforts

On January 11, 1995, the Commission amended its regulations governing public utilities and qualifying facilities. This rule revises and clarifies Commission policies on rate filings by public utilities under the Federal Power Act; issuances of securities and assumptions of liabilities by public utilities, licensees, and others; and procedural and technical regulations governing qualifying facilities. These changes will streamline the processing of workload and reduce regulatory burdens on the electric utility and qualifying facility industries.

Summary of Electric Power Workload and Resource Needs

The thrust of the electric program has been and remains the promotion of competition in the electric power industry. The Energy Policy Act was passed in the fall of 1992 and statutorily required regulations were put in place in 1993. While no clear picture of the actual long-term effect of the legislation on our workload has yet materialized, fundamental changes are developing in the electric industry, and the Commission must address new industry structure and policy issues, as well as continue to process a heavy caseload. The Commission has aggressively pursued policies to promote open transmission access over the last year, and we expect those activities to continue. Increasingly substantial resources will be devoted to the development of new policy initiatives to promote the goals of comparability, open transmission access, and increased competition in generation markets that underlie the Energy Policy Act. The Commission expects to define its recently established comparability requirement in greater detail in the weeks and months ahead, and to examine in detail how broadly both comparability and open-access requirements should be applied. We are seeing increases in voluntary

transmission service tariffs, as well as requests for mandatory transmission access, new arguments and issues regarding undue discrimination in transmission services, new transmission pricing concepts, more electric wholesale generator filings, and increased activity in the regional transmission group area. The impact of these changes on staffing requirements should become more evident as we gain experience and the industry reacts with more confidence to the new rules.

For a variety of reasons, the traditional electric workload has been increasing over recent years, and we see this workload continuing at this higher level in the near future. The workload fall-out from the new legislation and the increasing competitive pressures in the industry will add to, not subtract from, the "traditional" workload. We are introducing competition, not deregulating the industry. For example, whereas traditional utilities participating in the wholesale market generate a single rate proceeding (when the utility itself installs new generating capacity and seeks rate relief), non-traditional utilities may generate four proceedings (a certification proceeding if the power seller is an EWG, a rate proceeding for the power seller, a rate proceeding for the utility passing through the increased purchased power costs, and, possibly, a fourth for a third-party transmission supplier).

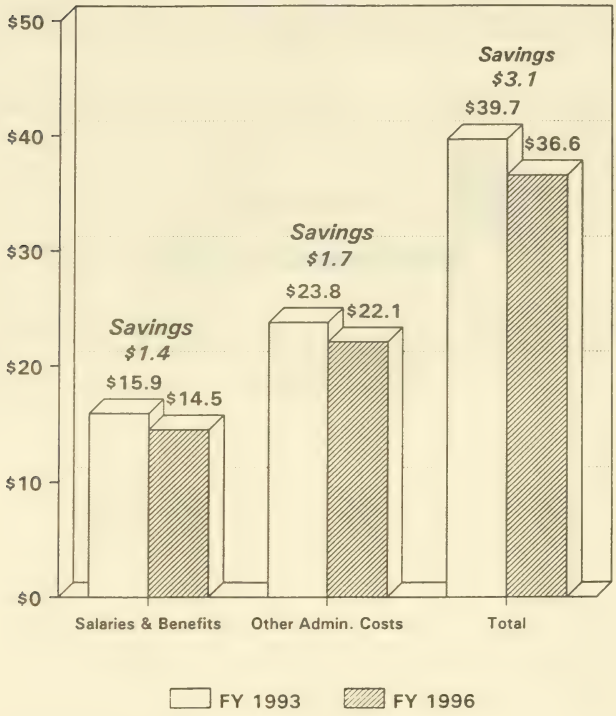
Given that the amount of the projected increased workload demands is unclear, we are holding staffing in the electric power program at the FY 1995 level. We believe that this will allow us to meet workload demands given our current expectation for future changes in the industry.

[See Appendix E for electric power workload tables.]

APPENDIX A

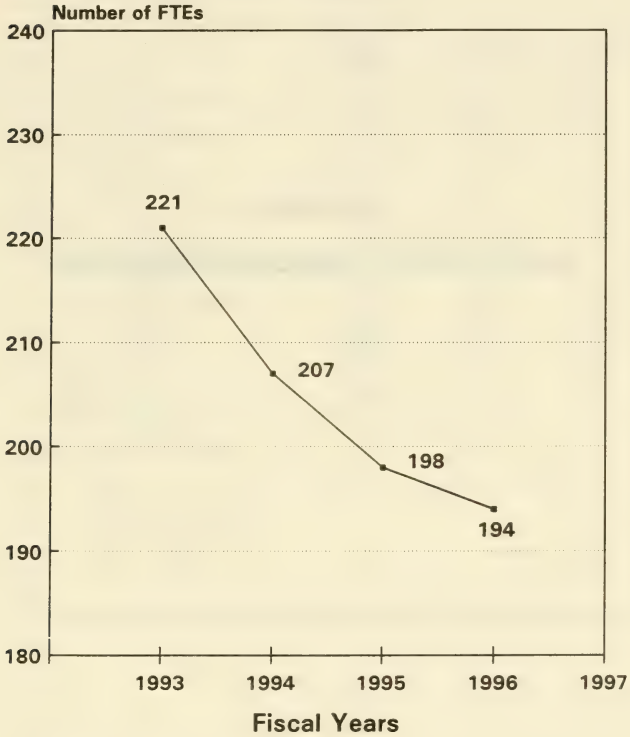
ADMINISTRATIVE SAVINGS

ADMINISTRATIVE SAVINGS
FY 1996 Compared to FY 1993
($ in Millions)



Adjusted for inflation/Rent not included

ADMINISTRATIVE FTES



Includes FTEs for Special Programs

APPENDIX B

SUPPLEMENTAL FINANCIAL INFORMATION

OBJECT CLASS SUMMARY
($ in Thousands)

		FY 1994 Actual	FY 1995 Appropriation	FY 1996 Request
11.0	Personnel Compensation	$ 83,873	$ 85,785	$ 88,512
12.0	Benefits	15,382	16,180	16,801
13.0	Benefits for Former Personnel	932	348	156
	SUBTOTAL	100,187	102,313	105,469
21.0	Travel & Transportation of Persons	2,145	2,581	2,579
22.0	Transportation of Things	20	20	20
23.0	Rents, Communications, & Utilities	14,213	13,446	20,161
24.0	Printing & Reproduction	1,810	1,845	1,878
25.0	Other Services	37,021	38,455	17,640
	Consulting	17,695	12,008	4,000
	Non-Federal	18,538	25,746	12,915
	Federal	788	701	725
26.0	Supplies & Materials	1,631	1,581	1,516
31.0	Equipment	5,133	5,818	2,195
41.0	Grants, Subsidies, & Contributions	125	89	84
42.0	Claims & Indemnities	5	25	25
	TOTAL	$162,290	$166,173	$151,567
	Application of Prior Years Budget Authority			(15,000)
	TOTAL REQUEST			$136,567

PROGRAM CONTRACTS SUMMARY
($ in Thousands)

	FY 1996 Request
Natural Gas and Oil Pipelines[1/]	
Cryogenics	$ 71
SUBTOTAL	$ 71
Hydropower[1/]	
Environmental Compliance	3,139
Headwater Benefits Studies	500
Dam Safety	290
SUBTOTAL	$ 3,929
TOTAL CONTRACTS	$ 4,000

1/ Budgeted funds for environmental contracts may be supplemented by budget authority available from prior years.

APPENDIX C

NATURAL GAS AND OIL PIPELINES WORKLOAD TABLES

SUMMARY NATURAL GAS AND OIL PIPELINES WORKLOAD

Number of Items by Program Activity

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Certificates	1,652	1,649	1,635
Rates	9,304	8,589	1,987
Oil Pipelines	541	706	712
TOTAL	11,497	10,944	4,334

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Certificates	1,665	1,678	1,682
Rates	9,524	8,810	2,118
Oil Pipelines	563	723	722
TOTAL	11,752	11,211	4,522

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Certificates	538	525	496	449
Rates	1,027	807	586	455
Oil Pipelines	212	190	173	163
TOTAL	1,777	1,522	1,255	1,067

PROGRAM WORKLOAD: CERTIFICATES

Number of Items by Category

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Construction & Operation (Nonformal)	136	135	130
Construction & Operation (Formal)	1	1	1
Environmental Condition Compliance	160	160	160
LNG Safety Inspections & Compliance Field Trips	238	247	258
Section 2.55, 284.11 & Subpart F Blanket	160	165	165
Prior Notice Filings	324	300	300
Other Certificate Filings	51	36	36
Abandonments	185	175	150
Declaratory Orders	27	25	30
Complaints	3	5	5
Rehearings	97	90	90
Technical Conferences	10	10	10
Compliance Filings	260	300	300
TOTAL	1,652	1,649	1,635

PROGRAM WORKLOAD: CERTIFICATES

Number of Items by Category

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Construction & Operation (Nonformal)	158	135	130
Construction & Operation (Formal)	4	1	1
Environmental Condition Compliance	160	160	160
LNG Safety Inspections & Compliance Field Trips	238	247	258
Section 2.55, 284.11 & Subpart F Blanket	158	170	170
Prior Notice Filings	297	315	325
Other Certificate Filings	44	50	50
Abandonments	188	170	150
Declaratory Orders	20	20	28
Complaints	4	5	5
Rehearings	99	95	95
Technical Conferences	10	10	10
Compliance Filings	285	300	300
TOTAL	1,665	1,678	1,682

PROGRAM WORKLOAD: CERTIFICATES

Number of Items by Category

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Construction & Operation (Nonformal)	107	85	85	85
Construction & Operation (Formal)	5	2	2	2
Environmental Condition Compliance	50	50	50	50
LNG Safety Inspections & Compliance Field Trips	0	0	0	0
Section 2.55, 284.11 & Subpart F Blanket	64	66	61	56
Prior Notice Filings	44	71	56	31
Other Certificate Filings	40	47	33	19
Abandonments	74	71	76	76
Declaratory Orders	12	19	24	26
Complaints	2	1	1	1
Rehearings	78	76	71	66
Technical Conferences	0	0	0	0
Compliance Filings	62	37	37	37
TOTAL	538	525	496	449

PROGRAM WORKLOAD: RATES

Number of Items by Category

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
General Section 4 Filings	21	25	25
Limited Section 4 Filings	193	130	130
Other Rate Filings	336	359	358
Tracking Filings	268	249	249
Compliance Filings	414	385	385
Refunds Reports	82	90	90
Technical Conferences	67	70	70
Litigated Section 4 Filings	47	55	55
Order No. 636 Implementation Filings	185	0	0
Intrastate Rates	13	15	15
Transportation Transactions	6,723	6,600	0
Contested Accounting Cases	2	3	3
Financial Audits	37	34	34
Accounting Approval Filings	71	62	62
Declaratory Orders	5	2	2
Complaints	11	10	9
Rehearings	829	500	500
TOTAL	9,304	8,589	1,987

PROGRAM WORKLOAD: RATES

Number of Items by Category

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
General Section 4 Filings	20	26	26
Limited Section 4 Filings	184	155	145
Other Rate Filings	320	355	380
Tracking Filings	233	285	285
Compliance Filings	375	415	425
Refunds Reports	108	97	95
Technical Conferences	67	70	70
Litigated Section 4 Filings	60	55	60
Order No. 636 Implementation Filings	336	0	0
Intrastate Rates	13	15	15
Transportation Transactions	6,760	6,623	0
Contested Accounting Cases	0	5	3
Financial Audits	19	55	34
Accounting Approval Filings	58	62	62
Declaratory Orders	2	2	3
Complaints	7	15	15
Rehearings	962	575	500
TOTAL	9,524	8,810	2,118

PROGRAM WORKLOAD: RATES

Number of Items by Category

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
General Section 4 Filings	3	4	3	2
Limited Section 4 Filings	37	46	21	6
Other Rate Filings	18	34	38	16
Tracking Filings	93	128	92	56
Compliance Filings	108	147	117	77
Refunds Reports	75	49	42	37
Technical Conferences	15	15	15	15
Litigated Section 4 Filings	68	55	55	50
Order No. 636 Implementation Filings	151	0	0	0
Intrastate Filings	2	2	2	2
Transportation Transactions	60	23	0	0
Contested Accounting Cases	2	4	2	2
Financial Audits	42	60	39	39
Accounting Approval Filings	18	31	31	31
Declaratory Orders	1	4	4	3
Complaints	17	21	16	10
Rehearings	317	184	109	109
TOTAL	1,027	807	586	455

PROGRAM WORKLOAD: OIL PIPELINES
Number of Items by Category
Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
General Filings	407	500	500
Rate Increase Filings	12	50	50
Tariff Filings: Stayed	8	20	20
Litigated Cases	62	75	80
Financial Audits	0	3	3
Review Remedial Orders	0	3	2
Adjust. Request Denials	0	1	1
Accounting Approval Filings	52	54	54
Declaratory Orders	0	0	1
Complaints	0	0	1
TOTAL	541	706	712

PROGRAM WORKLOAD: OIL PIPELINES
Number of Items by Category
Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
General Filings	395	500	500
Rate Increase Filings	12	50	50
Tariff Filings: Stayed	22	22	22
Litigated Cases	70	90	90
Financial Audits	3	3	3
Review Remedial Orders	14	2	2
Adjust. Request Denials	0	0	1
Accounting Approval Filings	47	54	54
Declaratory Orders	0	1	0
Complaints	0	1	0
TOTAL	563	723	722

PROGRAM WORKLOAD: OIL PIPELINES

Number of Items by Category

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
General Filings	28	40	40	40
Rate Increase Filings	0	0	0	0
Tariff Filings: Stayed	21	7	5	3
Litigated Cases	117	109	94	84
Financial Audits	4	1	1	1
Review Remedial Orders	23	9	10	10
Adjust. Request Denials	2	2	3	3
Accounting Approval Filings	15	20	20	20
Declaratory Orders	1	1	0	1
Complaints	1	1	0	1
TOTAL	212	190	173	163

APPENDIX D

HYDROPOWER WORKLOAD TABLES

SUMMARY HYDROPOWER WORKLOAD
Number of Items by Program Activity

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Hydropower Licensing	212	212	209
Dam Safety and Inspections	3,611	3,475	3,515
Project Compliance and Administration	2,110	2,256	2,457
TOTAL	5,933	5,943	6,181

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Hydropower Licensing	234	299	280
Dam Safety and Inspections	3,554	3,475	3,649
Project Compliance and Administration	2,100	2,157	2,256
TOTAL	5,888	5,931	6,185

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Hydropower Licensing	399	377	290	219
Dam Safety and Inspections	723	780	780	646
Project Compliance and Administration	801	811	910	1,111
TOTAL	1,923	1,968	1,980	1,976

PROGRAM WORKLOAD: HYDROPOWER LICENSING

Number of Items by Category

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Major Hydropower Licenses			
Constructed	2	4	4
New Capacity (Nonformal)	9	12	10
Relicense (Formal)	0	0	0
Relicense (Nonformal)	6	5	5
Minor Hydropower Licenses			
Constructed	0	2	2
New Capacity	7	12	12
Relicense	5	0	1
Preliminary Permit	49	57	55
Transmission Line License	0	0	0
Exemptions from Licensing (5 MW or less)	1	2	4
Exemptions: Conduit	3	5	5
Surrender of Preliminary Permits	25	26	25
Cancellation of Preliminary Permits	26	26	25
Declaratory Orders	1	1	1
Rehearings	78	60	60
TOTAL	212	212	209

PROGRAM WORKLOAD: HYDROPOWER LICENSING

Number of Items by Category

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Major Hydropower Licenses			
Constructed	1	4	8
New Capacity (Nonformal)	13	20	31
Relicense (Formal)	0	1	0
Relicense (Nonformal)	35	57	38
Minor Hydropower Licenses			
[illegible]structed	3	10	3
[illegible] Capacity	11	10	10
Relicense	9	13	12
Preliminary Permit	52	67	60
Transmission Line License	0	0	0
Exe[illegible]tions from Licensing [illegible] or less)	2	3	3
Exemptions: Conduit	6	2	4
Surrender of Preliminary Permits	21	25	25
Cancellation of Preliminary Permits	24	26	25
Declaratory Orders	1	1	1
Rehearings	56	60	60
TOTAL	234	299	280

PROGRAM WORKLOAD: HYDROPOWER LICENSING

Number of Items by Category

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Major Hydropower Licenses				
Constructed	10	11	11	7
New Capacity (Nonformal)	60	56	48	27
Relicense (Formal)	1	1	0	0
Relicense (Nonformal)	129	100	48	15
Minor Hydropower Licenses				
Constructed	13	10	2	1
New Capacity	26	22	24	26
Relicense	38	34	21	10
Preliminary Permit	44	41	31	26
Transmission Line License	0	0	0	0
Exemptions from Licensing (5 MW or less)	4	3	2	3
Exemptions: Conduit	4	1	4	5
Surrender of Preliminary Permits	0	4	5	5
Cancellation of Preliminary Permits	0	2	2	2
Declaratory Orders	2	2	2	2
Rehearings	68	90	90	90
TOTAL	399	377	290	219

PROGRAM WORKLOAD: DAM SAFETY AND INSPECTIONS

Number of Items by Category

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Operation Inspections	1,019	965	970
Prelicense Inspections	33	35	35
Construction Inspections	440	425	425
Exemption Inspections	344	335	320
Special Inspections	304	360	360
Dam Safety Engineering Evaluation and Support	900	900	950
Part 12 Reviews	281	165	165
EAP Tests	31	50	50
Environmental and Public Use Inspections	259	240	240
TOTAL	3,611	3,475	3,515

PROGRAM WORKLOAD: DAM SAFETY AND INSPECTIONS

Number of Items by Category

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Operation Inspections	1,019	965	1,044
Prelicense Inspections	33	35	35
Construction Inspections	440	425	425
Exemption Inspections	344	335	340
Special Inspections	304	360	360
Dam Safety Engineering Evaluation and Support	900	900	980
Part 12 Reviews	224	165	175
EAP Tests	31	50	50
Environmental and Public Use Inspections	259	240	240
TOTAL	3,554	3,475	3,649

PROGRAM WORKLOAD: DAM SAFETY AND INSPECTIONS

Number of Items by Category

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Operation Inspections	138	138	138	64
Prelicense Inspections	0	0	0	0
Construction Inspections	175	175	175	175
Exemption Inspections	100	100	100	80
Special Inspections	125	125	125	125
Dam Safety Engineering Evaluation and Support	149	149	149	119
Part 12 Reviews	36	93	93	83
EAP Tests	0	0	0	0
Environmental and Public Use Inspections	0	0	0	0
TOTAL	723	780	780	646

PROGRAM WORKLOAD: PROJECT COMPLIANCE AND ADMINISTRATION

Number of Items by Category

Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Environmental Amendments	625	800	1,000
Engineering Amendments	78	60	60
Schedule Amendments	225	325	325
Project Amendments	138	75	75
Non-Project Use of Project Lands	95	50	50
Declaration of Intention	14	5	5
Unlicensed Projects	1	10	10
Federal Lands Review	206	230	230
Headwater Benefits Investigations	6	8	8
Headwater Benefits Assessments	97	100	100
Environmental Compliance	250	225	225
Engineering Compliance	59	15	15
Procedural Compliance	85	60	60
Schedule Compliance	120	175	175
Penalty Assessment	25	12	12
Compliance Audits	24	24	24
Amendment (New Capacity)	0	1	1
Surrender of License	23	35	35
Transfer of License	10	25	25
Complaints	3	5	6
Rehearings	26	16	16
TOTAL	2,110	2,256	2,457

PROGRAM WORKLOAD: PROJECT COMPLIANCE AND ADMINISTRATION

Number of Items by Category

Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Environmental Amendments	648	700	800
Engineering Amendments	69	60	60
Schedule Amendments	234	325	325
Project Amendments	148	75	75
Project Use of Project Lands	81	50	50
Declaration of Intention	15	5	5
Unlicensed Projects	1	10	10
Federal Lands Reviews	208	230	230
Headwater Benefits Investigations	6	8	8
Headwater Benefits Assessments	97	100	100
Environmental Compliance	248	225	225
Engineering Compliance	53	15	15
Procedural Compliance	63	60	60
Schedule Compliance	125	175	175
Penalty Assessment	11	12	12
Compliance Audits	24	24	24
Amendment (New Capacity)	0	1	1
Surrender of License	28	35	35
Transfer of License	12	25	25
Complaints	4	6	5
Rehearings	25	16	16
TOTAL	2,100	2,157	2,256

PROGRAM WORKLOAD: PROJECT COMPLIANCE AND ADMINISTRATION

Number of Items by Category

Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Environmental Amendments	344	321	421	621
Engineering Amendments	18	27	27	27
Schedule Amendments	19	10	10	10
Project Amendments	71	61	61	61
Non-Project Use of Project Lands	16	30	30	30
Declaration of Intention	4	3	3	3
Unlicensed Projects	1	1	1	1
Federal Lands Review	5	3	3	3
Headwater Benefits Investigations	27	27	27	27
Headwater Benefits Assessments	0	0	0	0
Environmental Compliance	163	165	165	165
Engineering Compliance	24	30	30	30
Procedural Compliance	22	44	44	44
Schedule Compliance	22	17	17	17
Penalty Assessment	15	29	29	29
Compliance Audits	0	0	0	0
Amendment (New Capacity)	0	0	0	0
Surrender of License	14	9	9	9
Transfer of License	6	4	4	4
Complaints	9	8	7	8
Rehearings	21	22	22	22
TOTAL	801	811	910	1,111

APPENDIX E

ELECTRIC POWER WORKLOAD TABLES

ELECTRIC POWER WORKLOAD
Number of Items by Category
Receipts

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Rate Filings	1,646[1/]	975	1,000
Formal Investigations Rate Level	22	30	40
Compliance Filings	140	145	150
Formal Investigations-Other	14	22	25
Small Power	127	210	135
Cogeneration	174	175	175
Corporate Applications	29	30	32
Interlocking Positions	89	90	90
Transmission Service Requests	11	10	10
EWG Determinations	108	110	115
Securities: Negotiated	45	55	55
Securities: Competitive	38	35	35
Financial Audits	45	40	40
Accounting Approval Filings	122	113	113
Contested Accounting Cases	2	4	4
FA Refund Reports	11	10	10
Federal Rate Filings	18	8	8
Declaratory Orders	50	50	50
Complaints	25	25	25
Rehearings	128	135	135
TOTAL	2,844	2,272	2,247

1/ Includes approximately 700 filings made pursuant to an amnesty window that closed December 31, 1993.

ELECTRIC POWER WORKLOAD
Number of Items by Category
Completions

	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Rate Filings	1,356	1,259	1,000
Formal Investigations Rate Level	16	30	40
Compliance Filings	132	145	150
Formal Investigation-Other	15	19	20
Small Power	137	210	135
Cogeneration	175	175	175
Corporate Applications	28	30	32
Interlocking Positions	86	90	90
Transmission Service Requests	2	5	7
EWG Determinations	99	105	110
Securities: Negotiated	43	55	55
Securities: Competitive	39	35	35
Financial Audits	40	53	50
Accounting Approval Filings	114	113	113
Contested Accounting Cases	0	7	4
FA Refund Reports	10	17	10
Federal Rate Filings	16	8	8
Declaratory Orders	37	50	50
Complaints	14	25	25
Rehearings	126	135	135
TOTAL	2,485	2,566	2,244

ELECTRIC POWER WORKLOAD
Number of Items by Category
Year-End Pending

	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimate	FY 1996 Estimate
Rate Filings	198	488	204	204
Formal Investigations Rate Level	35	41	41	41
Compliance Filings	57	65	65	65
Formal Investigations-Other	32	31	34	39
Small Power	14	4	4	4
Cogeneration	19	18	18	18
Corporate Applications	11	12	12	12
Interlocking Positions	7	10	10	10
Transmission Service Requests	3	12	17	20
EWG Determinations	19	28	33	38
Securities: Negotiated	3	5	5	5
Securities: Competitive	7	6	6	6
Financial Audits	60	65	52	42
Accounting Approval Filings	73	81	81	81
Contested Accounting Cases	5	7	4	4
FA Refund Reports	9	10	3	3
Federal Rate Filings	3	5	5	5
Declaratory Orders	19	32	32	32
Complaints	21	32	32	32
Rehearings	72	74	74	74
TOTAL	667	1,026	732	735

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